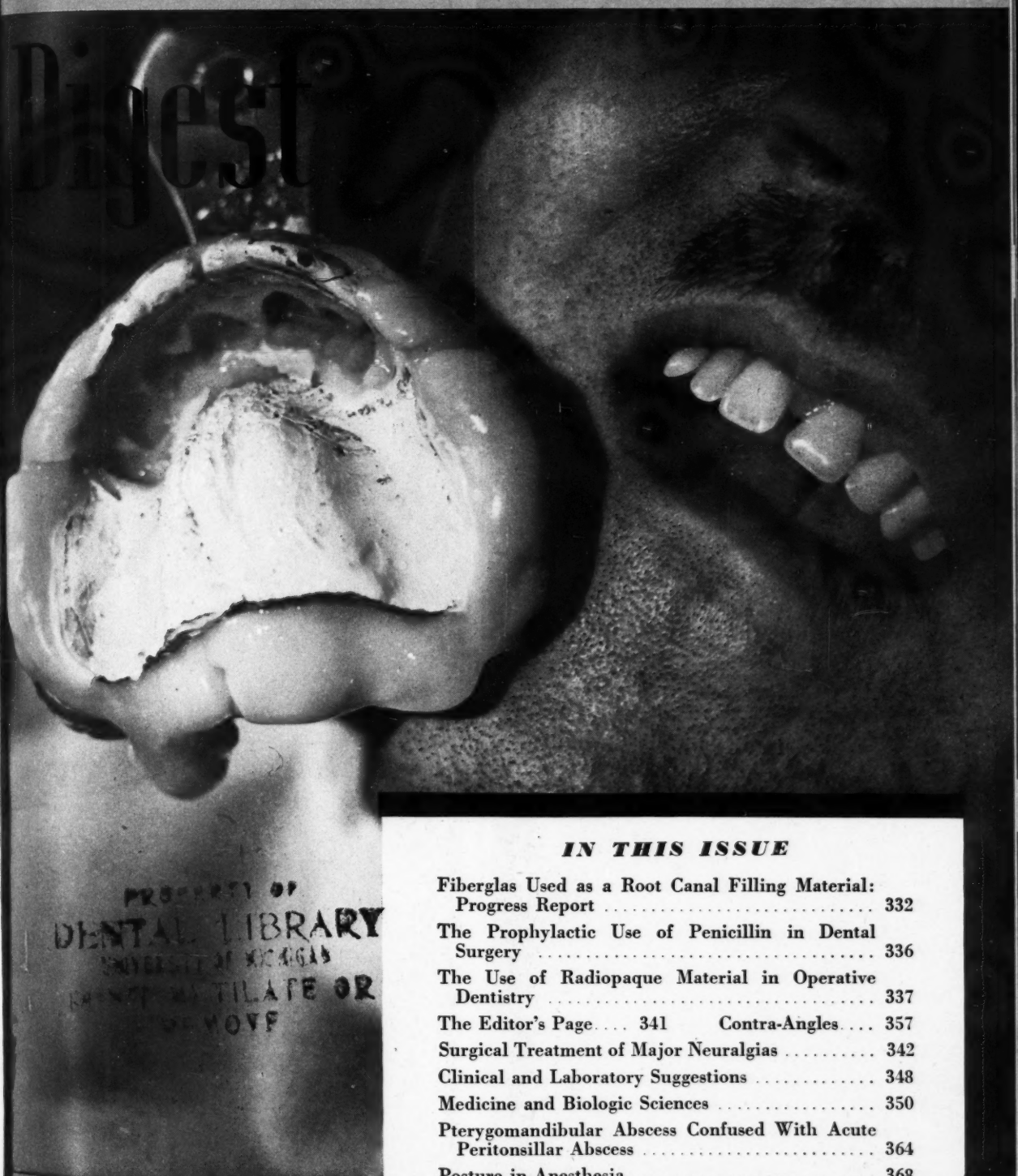
Dental Digest

JULY • 1947



IN THIS ISSUE

Vol. 53, No. 7

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About Our CONTRIBUTORS

Readers of the December 1946 DIGEST will recall HARRY MAETH, D.D.S. (Columbia University, School of Dental and Oral Surgery, 1925) as the author of OXYCEL, A NEW HEMOSTATIC AGENT. Two years ago he introduced Fiberglas as a root canal filling material (October 1945 DIGEST). This preliminary report is supplemented in the current issue by a progress report based on Doctor Maeth's further use of the material in his general practice.

A. D. FAIER, D.D.S. (Creighton University, College of Dentistry, 1936), a general practitioner, discusses THE PROPHYLACTIC USE OF PENICILLIN IN DENTAL SURGERY. Indications for the prophylactic use of the medication are listed as well as the forms in which it is available for administration.

LEON SAKS, D.D.S., is making his initial appearance in these pages with a discussion on THE USE OF RADIOPAQUE MATERIALS IN OPERATIVE PROCEDURES. The technique presented is a means of ascertaining the proximity of a carious area to the pulp or its horns during cavity preparation. Doctor Saks obtained his undergraduate training from the Harvard University, Dental School and the Ohio College of Dental Surgery from which he graduated in 1923. His special interest is silicates on which he has done research for twenty years in the course of practicing general dentistry.

ROLAND M. KLEMME, M.D., F.A.C.S., F.I.C.S. (Washington University, School of Medicine, 1921) is a Professor of Surgery in the St. Louis University School of Medicine. He is an internationally known neurosurgeon with twenty years of teaching and research experience in his field. The medical literature contains numerous articles by him on neurologic surgery. In view of the possibility of confusing some dental conditions with neuralgic disturbances, Doctor Klemme's article, SURGICAL TREATMENT OF MAJOR NEURALGIAS, is an important contribution to the study of differential diagnosis in dental practice.

EDWARD J. RYAN, B.S., D.D.S., Editor

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708 Church Street, Evanston, Illinois

The magazine is mailed on the fifteenth of the month of issue.

FIBERGLAS *used as a Root Canal Filling Material*

Progress Report

HARRY MAETH, D.D.S., Mosinee, Wisconsin

DIGEST

Observations on the clinical application of Fiberglas have been made for a period of approximately two years since the preliminary report on this material as a root canal filling material was published.[1] Essential data from the records of these observations are presented here.

Editor's Note: The photography of the specimens shown and consultation on technical physical data were made possible through the courtesy of Mr. Robert B. Taylor, Assistant Director of Research, Owens-Corning Fiberglas Corporation.

[1]Maeth, Harry: Fiberglas Used as a Root Canal Filling Material, Preliminary Report. DENTAL DIGEST 51:555-556 (October) 1945.

[2]Davison, A. W.: Fiberglas: A New Engineering Material, Owens-Corning Fiberglas Corporation, page 4.

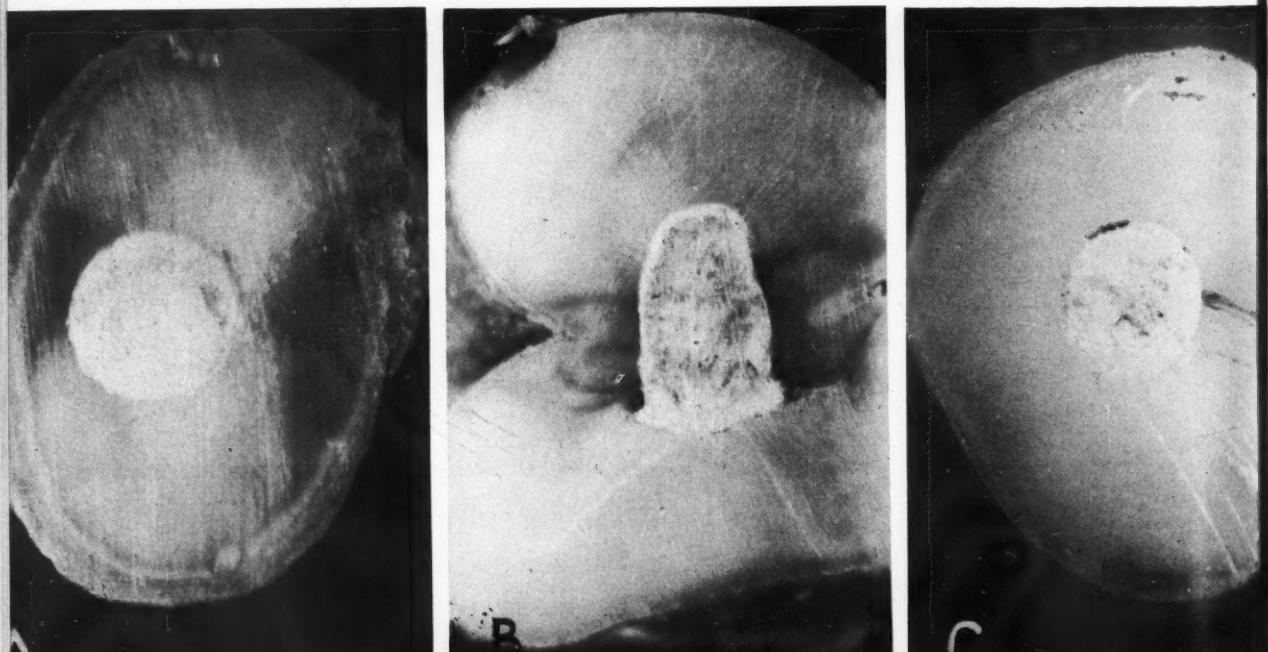
FIBERGLAS IS a new engineering material which possesses great dimensional stability. This property makes possible a root canal filling material which completely fills the root canal and remains in constant contact with the walls of the root canal (Fig. 1).

A Reinforcing Agent

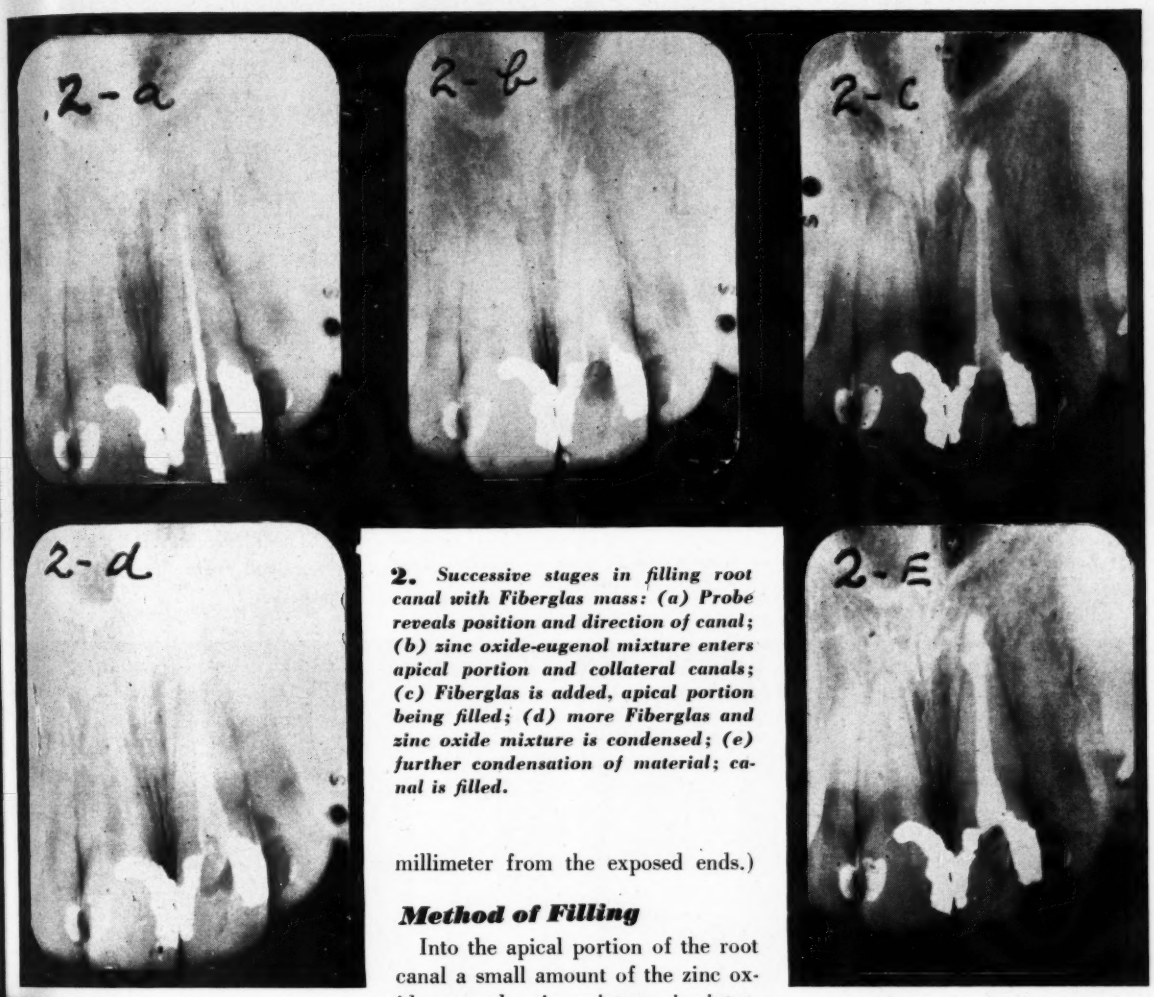
Fiberglas serves as a reinforcing material in a capacity comparable to that whereby steel reinforces concrete. Steel is the material usually thought of as the symbol of strength, but glass fibers possess the greatest tensile strength-weight ratio of any commercial material either occurring in nature or synthesized by man. Fibers averaging 23/100,000 of an inch in diameter have a tensile strength of more than 250,000 pounds per square inch. Experimental fibers have been produced with a diameter of 2/100,000 of an inch and tensile strengths considerably higher than this value.[2]

Imperviousness to Fluids

In these experiments, the superfine yarn, clean glass without treatment was the most satisfactory. The root canal filling mass consisted of: zinc oxide, eugenol, a trace of rosin, a



1. *A, B, and C: Root canals filled with Fiberglas. These teeth were filled and later extracted for the purpose of examination.*



2. ***Successive stages in filling root canal with Fiberglas mass: (a) Probe reveals position and direction of canal; (b) zinc oxide-eugenol mixture enters apical portion and collateral canals; (c) Fiberglas is added, apical portion being filled; (d) more Fiberglas and zinc oxide mixture is condensed; (e) further condensation of material; canal is filled.***

trace of zinc stearate, and Fiberglas. The physical appearance of the Fiberglas thus used is not unlike that of white cotton wadding. The filaments are about 3 microns in diameter, and the material is very pliable.

That the Fiberglas mass is impervious to fluids and that no capillary attraction takes place was demonstrated as follows: A glass procaine tube was filled with the Fiberglas mass. The ends of the tube were left open, and the tube with its contents was immersed in a deeply tinted solution of methylene blue for one month. Prepared teeth with root canals filled with the Fiberglas mass were *also* immersed in the same methylene blue solution for one month. At the end of thirty days, sections of the teeth and of the material from the glass tube revealed no trace of the methylene blue. (These sections were begun at less than one millimeter from the exposed ends.)

Method of Filling

Into the apical portion of the root canal a small amount of the zinc oxide-eugenol-rosin mixture is introduced with the aid of a celluloid cement tube. Subsequently, particles of the Fiberglas are combined with the zinc oxide mixture and worked into the canal with S. S. White root canal instruments, numbers 34, 35, 36, and 37. As filling of the canal progresses, dry portions of the Fiberglas are introduced with instruments. Light pressure is applied to condense the mass. At this stage, sufficient zinc oxide mixture is in the canal to combine readily with the Fiberglas as it is placed.

3. ***Same root canal as in Figure 2 with root end resected.***

The successive steps of this procedure can be verified with the x-ray (Fig. 2). Collateral canals readily receive the plastic zinc oxide mixture when it is first introduced with the aid of the cement tube.

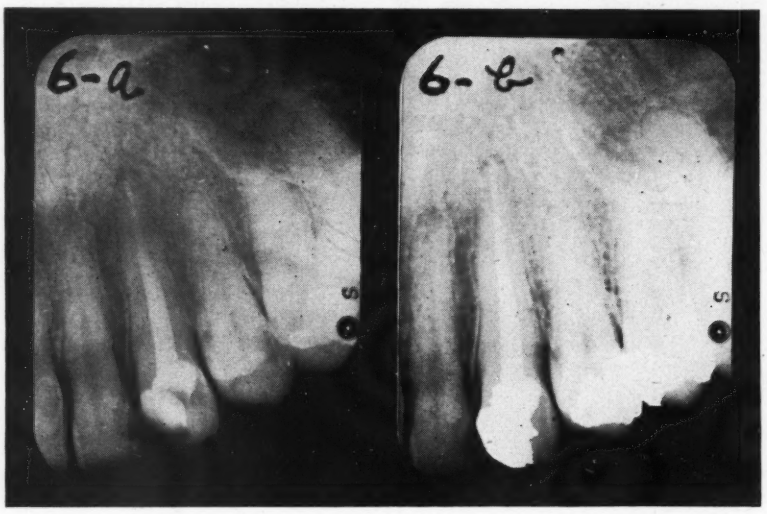
This type of root canal filling material apparently has no irritating effect which would interfere with or retard tissue-healing and regeneration. (See roentgenographic records

4. *Evidence of normal regeneration of bone tissue in area of resected root ends: (a) Postoperative; root ends resected; (b) one year later.*

of cases with postoperative follow-up records. [Figs. 4 and 5].)

Advantages

1. Plasticity, comparative ease of manipulation, ready conformity to the contour of the canal.
2. No evaporation, as in chloroform-gutta-percha mixture, during filling and checking procedure.
3. Great dimensional stability assuring intactness of a filled canal.
4. Insolubility in tissue fluids.
5. Radiopaque property which permits x-ray recording stages of filling and upon completion.
6. Does not absorb moisture; is impervious to fluids; has no capillarity.
7. The filling material can readily be removed from the root canal, if necessary.

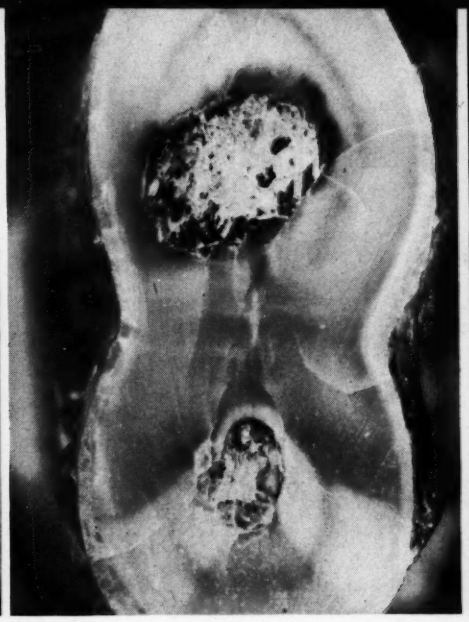


5. *(a) Root canal filled and root end resected; (b) checkup; (c) checkup; normal regeneration of bone tissue.*

8. Nonirritating to tissue.
9. May be cut clean, as when root is severed in apicoectomy.
10. Does not discolor tooth structure.
11. Nonconductor of thermal changes.

6. *The Fiberglas filling has an apparently dense working structure. In this cuspid tooth the prepared root canal was filled with the Fiberglas mass (a), and a few days later a two-surface gold foil filling was inserted into the crown of the tooth (b).*

A



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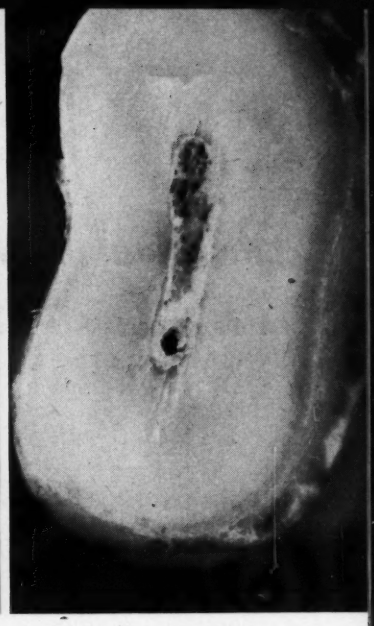
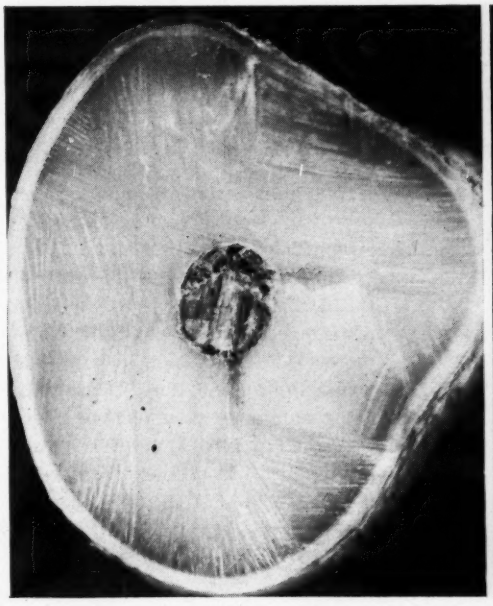


C

7. ***A, B, C, D, and E: Root canals filled with gutta-percha. These clinical specimens were obtained from different parts of the country.***



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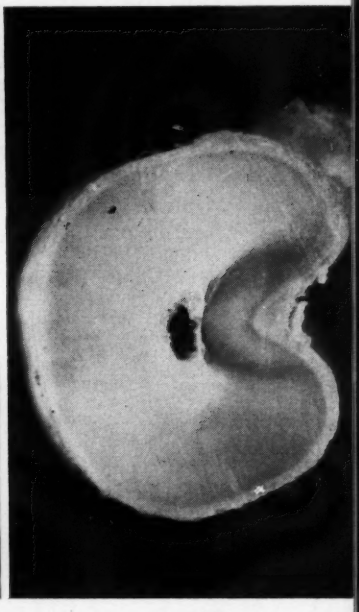


E

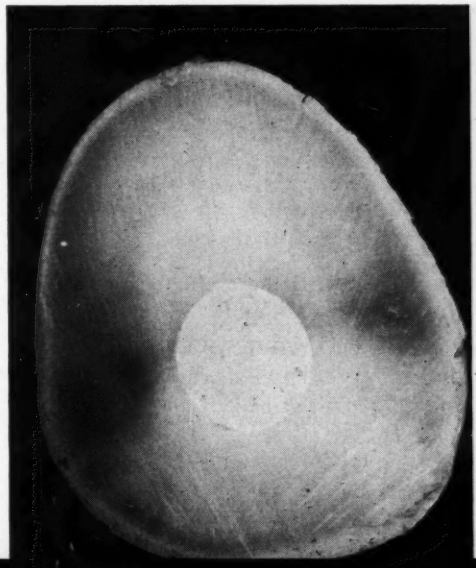
Comments

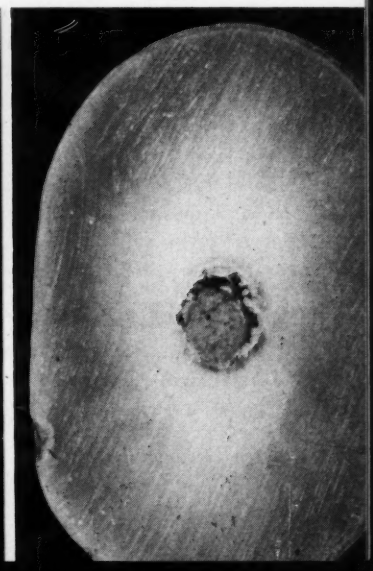
In the hands of experienced operators gutta-percha has been successfully used as a root canal filling material. Several dozen teeth with gutta-percha root canal fillings in them were obtained from dentists in several states and sectioned for examination. A surprisingly large percentage of these sections revealed shrunken canal fillings (Fig. 7). These may have been caused by difficulty of operation or by some evaporation of the solvent portion of the material during the process of condensation.

Inasmuch as there is *no evaporation* of the Fiberglas mass, the stages of the filling procedure progress with consummate ease and may be checked with the x-ray. Corrections can then be made as indicated by the roentgenogram. The density of the material remains undisturbed.

During the recent war years the output of Fiberglas was largely and, in fact, almost exclusively diverted to war production. Now the supply of this material is virtually unlimited. Other dental applications of Fiberglas are now being studied and reports may follow in the near future.

8. ***Section of one of the Fiberglas-filled teeth (A) compared with a section of a tooth that contained a gutta-percha root canal filling (B).***





A B

The Prophylatic Use of PENICILLIN *in Dental Surgery*

A. D. FAIER, D.D.S., Omaha

DIGEST

Preoperative administration of penicillin is advocated here for certain specific oral and systemic conditions. These are listed along with the forms in which the drug may be given for prophylactic purposes. It is emphasized that such prophylaxis should not substitute for but should merely supplement local preoperative treatment of the patient.

THE PROPHYLACTIC use of penicillin deserves to have a prominent place in oral surgery, particularly when gross dental sepsis is present or the systemic condition of the patient is impaired by inefficiency of vital organs.

Although penicillin has been called "the miracle drug of modern medicine and surgery," it is not a panacea. But its preoperative use can be advocated for specific oral conditions.

Methods of Administration

1. Troches of 500 and 1000 units for local action in the oral cavity or in the form of a solution for topical application. (This latter method is not as efficacious in the preoperative use of the drug as some others.)

2. Tablets for oral administration, available in 25,000 units per tablet. A massive dose of the drug must be given in this form, amounting to at least three times that necessary for intravenous or intramuscular administration. Such a dosage, 20,000 to 30,000 units every three hours, is not practical in office routine but is desirable in hospital procedure.

3. Penicillin in oil is the form of the drug which appears to be most advantageous for prophylactic use in the office. A suspension of powdered penicillin in a mixture of beeswax and peanut oil, it is supplied in a concentration of 300,000 units. The drug in this form will produce therapeutic plasma levels lasting 24 hours or longer. It is administered by injection, preferably about four hours before any surgery is performed to permit the maximum therapeutic level to be reached. When greater antibiotic effect is required, 300,000 units of penicillin should be given in oil the day before surgery and again four hours before operation.

All these methods of administration of penicillin have value but for the ambulatory patient in the dental office the 300,000 units in oil is the most practical method.

Indications for Prophylactic Use

1. Gross dental sepsis

a) Periodontal lesions with suppurative gingivitis.

b) Periodontal abscess with gingival involvement.

c) Periapical abscess (granulomatous conditions and areas of rarefication revealed by the roentgenogram).

d) Chronic pericoronal involvements, particularly of the lower third molar.

e) Deeply impacted teeth in the mandible or maxilla, requiring extraction.

f) The removal of extensive cysts, especially those accompanied by suppuration.

g) Fractures of either the upper or lower jaw.

h) Acute infections.

2. Systemic conditions.

a) Cardiac involvements, especially of the valvular type.

b) Kidney conditions, various types of nephritis.

Comment

The use of penicillin in preoperative prophylaxis does not obviate the need to remove all local debris, such as heavy calculus, or to treat the tissues locally to remove as many anaerobic organisms as possible. These steps, together with the administration of penicillin, will bring about a marked improvement in the postoperative reaction of the patient.

In my own experience I find that the prophylactic use of penicillin tends to reduce postoperative inflammation of the oral mucous membrane and the incidence of infection. As a result, there is less postoperative pain and healing is more rapid.

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The Use of RADIOPAQUE MATERIAL *in Operative Procedures*

LEON SAKS, D.D.S., Cincinnati

DIGEST

A radiopaque substance enables the dentist to determine whether all carious dentine has been removed in cavity preparation. Radiopaque material on cotton or similar material in a cavity reveals a radiolucent shadow on the roentgenogram if an area containing caries still remains. A heavy shadow indicates the need to excavate the cavity further; a minutely thin shadow in an area close to the pulp (1) warns the operator to be cautious in further drilling to avoid pulpal exposure or injury, or (2) suggests that he impregnate the remaining decalcified layer of dentine with silver nitrate solution.

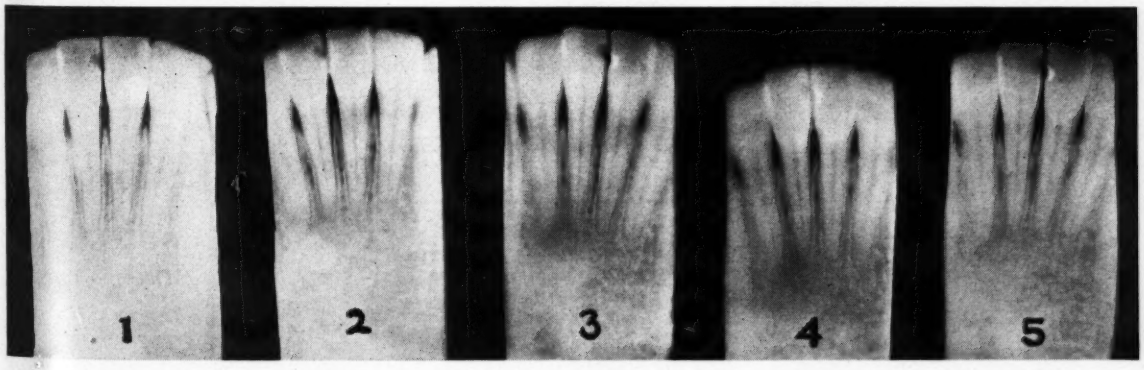
This method keeps the dentist informed of the exact proximity of a carious area to the pulp or its horns.

A STANDARD roentgenographic technique, used in the diagnosis and treatment of body or bone cavities, is applied here to operative dentistry. The treatment of dental caries is the same as that of any other disease wherein surgery is indicated: (1) diagnosis, (2) surgical removal, and (3) restoration of the wounded tissues. The roentgenogram is an extremely valuable operative accessory but, unfortunately, operative dentistry has not used it *during* as well as *before* or *after* operation.

In removing carious dentine, there is the problem of avoiding pulpal exposure or pulpal *injury*, (chiefly through *pressure* or *heat*), in carious areas that closely approach the pulp. To meet this problem, the dentist may fill the cavity with a radiopaque material, take a roentgenogram, and check the result to see if there is any diseased tissue remaining in the cavity. This is a simple, inexpensive, and accurate technique. Its value in restoring children's and adults' teeth has been proved through twenty years' use by the author and many others.

Armamentarium

1. X-ray machine
2. X-ray films, *preferably bitewing*
3. Cotton pliers



1. *Checking removal of carious dentine and proximity of pulp in silicate restorations where the technique is based on conservation of tooth substance and small external filling surfaces (veneer silicate).*

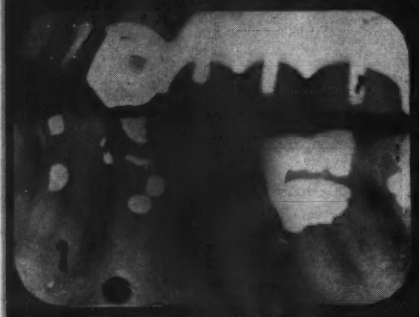
1. Caries (enamel) right lower central incisor, mesial. (There is an old silicate filling in mesial left central incisor.)

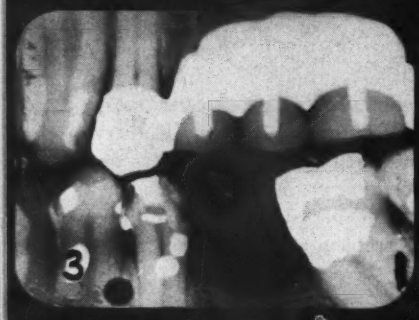
2. Checking for removal of carious dentine by the use of cotton with radiopaque oil (lipiodol). Cavity prepared from lingual proximal carried through to labial surface (just out of embrasure). Opening into cavity small.

3. Dentinal filling (medicated base) in place.

4. Silicate completed showing excess used over the strip to maintain and mold the filling, preventing gingival overhang.

5. Veneer silicate completed.





2. ***Comparison of some radiopaque materials. Mesio-occlusal-distal cavity lower right second bicuspid. Small amalgam fillings on buccal and lingual.***

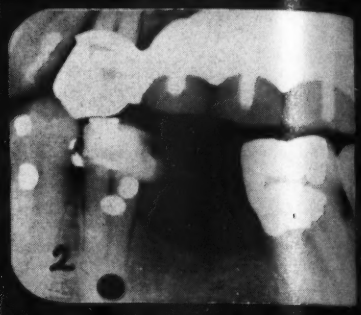
1. Without any radiopaque discloser (approach to pulp doubtful).

2. Radiopaque oil (iodine in poppyseed oil) on cotton in M.O.D. cavity.

3. Thymol iodide paste on cotton.

4. Potassium iodide on cotton.

All the halogens are radiopaque to some degree; some, however, stain; others are crystalline and interfere with adaptability to cavity walls; others are too insoluble. Pastes are more difficult to place and remove.



4. Cotton

5. Radiopaque material (lipiodol, an iodized oil obtained by fixation of iodine in poppyseed oil)

Other Radiopaque Materials

1. Thymol iodide: Paste in alcohol may often be used.

2. Sodium iodide: Solution is too granular for general use.

3. Gutta percha: Not advisable because heat is required to soften and pressure to apply it.

4. Tin foil: Not advisable because of the difficulty of filling the cavity and the pressure required.

Technique

When caries is believed to have been removed or when approaching the pulp or when access to a cavity is difficult, the following technique may be used:

1. Cover pellet of cotton with radiopaque oil (lipiodol) or other radiopaque material.

2. Place cotton in cavity with explorer point, using only sufficient pressure to fill the cavity with the cotton.

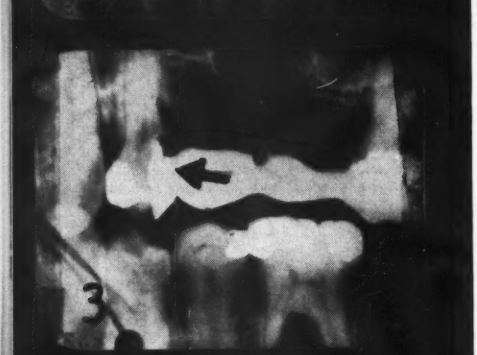
3. Wipe all excess of oil off the surfaces of the teeth.

4. Place bitewing film in mouth (corners of film bent to allow placement *close* to crown of tooth) and expose film same time as usual (or, possibly, 10 per cent longer exposure).

5. Develop immediately. Note if there is still a layer of decalcified or carious dentine below the cotton and, also, its relation to the pulp.

6. If there is still a heavy radiolucent shadow under the radiopaque cotton, excavate further.

7. If the shadow is that of a *very* thin area in the posterior teeth, ammoniacal silver nitrate and eugenol may be applied; or, in many cases, it may be preferable to apply the eugenol first, then the silver nitrate



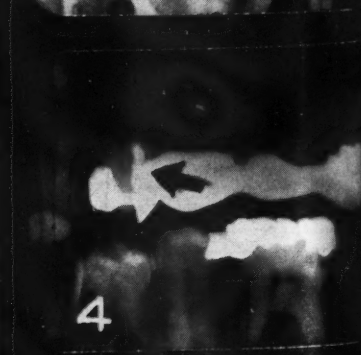
3. ***Removal of caries from abutment tooth.***

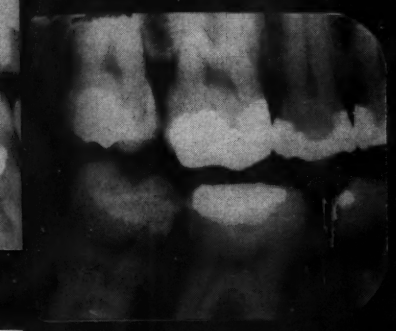
1. Caries under inlay (gingival and distal). Not advisable to remove bridge which is very weak (inlay with narrow occlusal, pontics without cusps connected by thin solder joint).

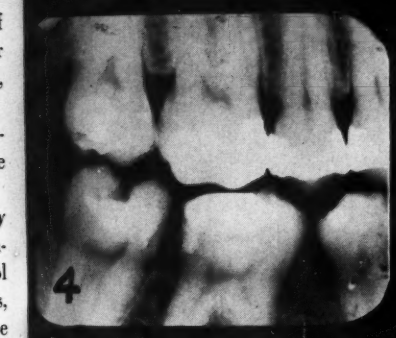
2. Radiopaque oil on cotton to check the removal of caries. Note shadow under cotton. This indicates that carious or decalcified dentine still remains.

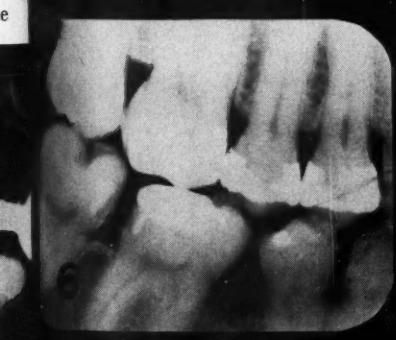
3. Film taken after further excavation where indicated on (2); medicated base in place.

4. Completed silicate over base; bridge not removed.









4. ***Use of x-ray to check removal of carious dentine in preparing cavities in teeth of man, aged 25. Teeth difficult of access because of small mouth and crowns not completely emerged from gingiva.***

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1. Caries in the mandibular teeth were only revealed by an interproximal bitewing:

a) Distal, first molar

b) Mesial, second molar

c) Lingual (margin) of first molar

2. Mesioclusal cavity in second molar filled with cotton covered with radiopaque oil (lipiodol). Incomplete removal of carious dentine shown by radiolucent area under cotton discloser.

3. After further excavation, a second roentgenogram of the cavity filled with cotton covered with lipiodol showed no radiolucent shadow.

3A. Medicated cement base after application of ammoniacal silver nitrate solution (Howe) precipitated with eugenol. Oxyphosphate-cement powder and liquid: eugenol (25 per cent of volume of liquid), pulverized thymol crystals (25 per cent of volume of cement powder) and thymol iodide (25 per cent of cement powder). Mix all together, adding only slight amount of cement powder at first and additional small amounts during spatulation. Insert in cavity with explorer point moistened with alcohol, using very little pressure.

This roentgenogram discloses that the silver nitrate will be adequate because no penetration is required or even desirable. (Average dentist does not allow time for penetration.)

4. Discloser in distal of lower first molar (filled independently of lingual in order not to weaken tooth).

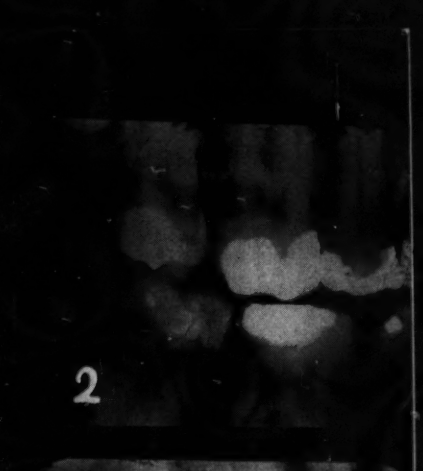
5. Distal cavity completed, all carious dentine removed.

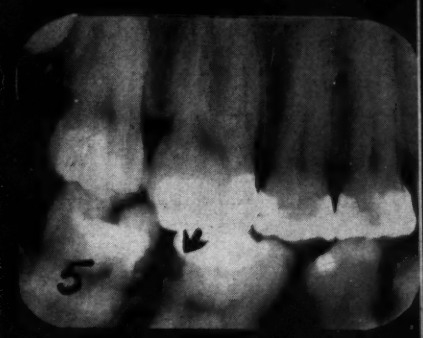
6. Medicated cement base in distal first molar.

7. Amalgam M. O. second molar, over the base.

8. Amalgam D., first molar; also, linguoclusal section filled. Bitewing view.

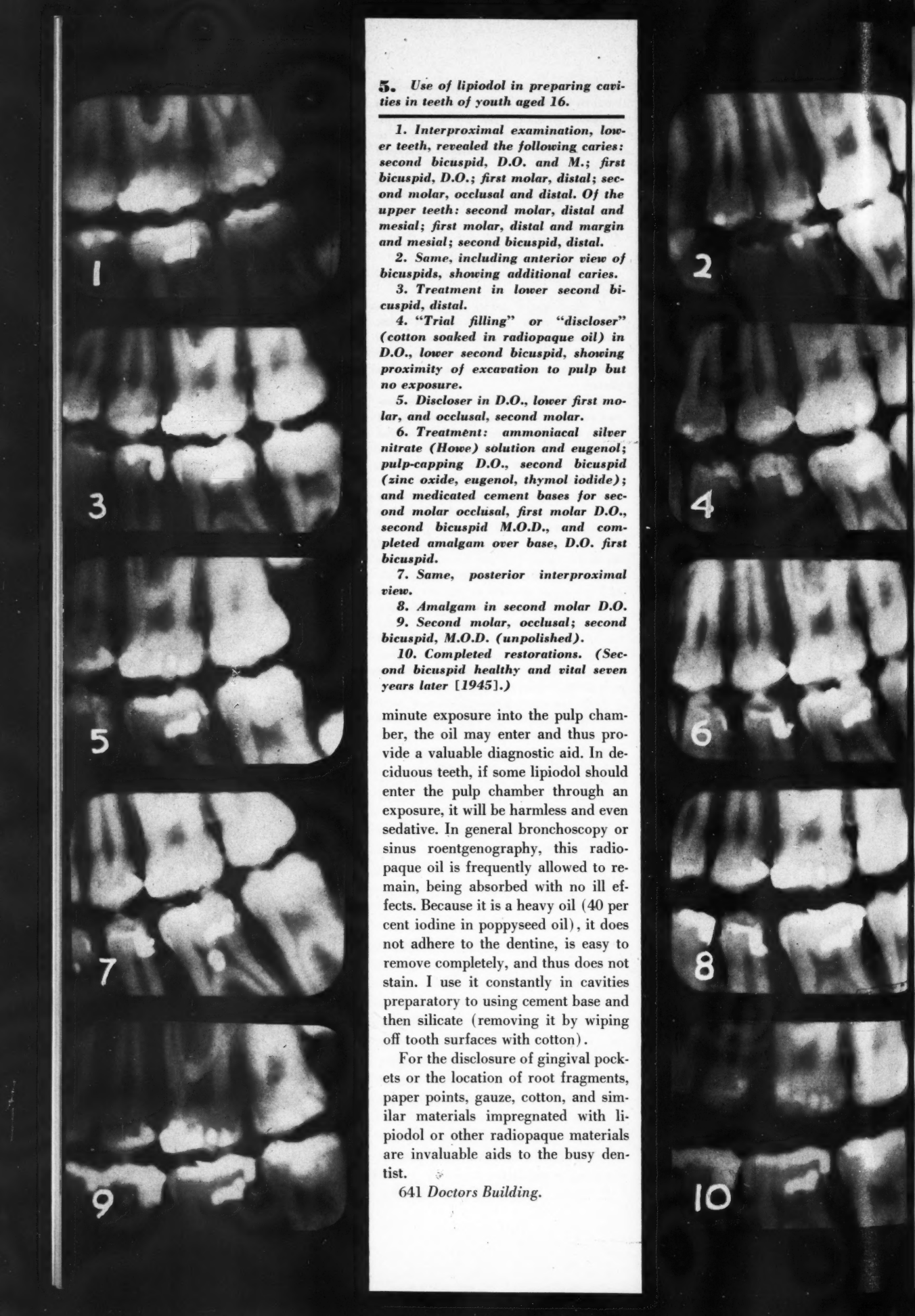
9. Same, periapical view.





to avoid pulpal shock, for penetration is scarcely necessary if the shadow is minutely thin. The dentist may even decide to insert a sedative treatment for a few months or a year or longer and *then* remove the remaining decalcified or carious layer. Any technique that removes all doubt that the carious area has been completely removed is valuable.

In those cases where there is a



5. ***Use of lipiodol in preparing cavities in teeth of youth aged 16.***

1. Interproximal examination, lower teeth, revealed the following caries: second bicuspid, D.O. and M.; first bicuspid, D.O.; first molar, distal; second molar, occlusal and distal. Of the upper teeth: second molar, distal and mesial; first molar, distal and margin and mesial; second bicuspid, distal.

2. Same, including anterior view of bicuspids, showing additional caries.

3. Treatment in lower second bicuspid, distal.

4. "Trial filling" or "discloser" (cotton soaked in radiopaque oil) in D.O., lower second bicuspid, showing proximity of excavation to pulp but no exposure.

5. Discloser in D.O., lower first molar, and occlusal, second molar.

6. Treatment: ammoniacal silver nitrate (Howe) solution and eugenol; pulp-capping D.O., second bicuspid (zinc oxide, eugenol, thymol iodide); and medicated cement bases for second molar occlusal, first molar D.O., second bicuspid M.O.D., and completed amalgam over base, D.O. first bicuspid.

7. Same, posterior interproximal view.

8. Amalgam in second molar D.O.

9. Second molar, occlusal; second bicuspid, M.O.D. (unpolished).

10. Completed restorations. (Second bicuspid healthy and vital seven years later [1945].)

minute exposure into the pulp chamber, the oil may enter and thus provide a valuable diagnostic aid. In deciduous teeth, if some lipiodol should enter the pulp chamber through an exposure, it will be harmless and even sedative. In general bronchoscopy or sinus roentgenography, this radiopaque oil is frequently allowed to remain, being absorbed with no ill effects. Because it is a heavy oil (40 per cent iodine in poppyseed oil), it does not adhere to the dentine, is easy to remove completely, and thus does not stain. I use it constantly in cavities preparatory to using cement base and then silicate (removing it by wiping off tooth surfaces with cotton).

For the disclosure of gingival pockets or the location of root fragments, paper points, gauze, cotton, and similar materials impregnated with lipiodol or other radiopaque materials are invaluable aids to the busy dentist.

641 *Doctors Building.*

The EDITOR'S *Page*

ACTINOMYCOSIS is a relatively uncommon disease. In the twenty-year period from 1920 to 1940, 839 cases of all types have been reported in the United States, the greatest number in the Mississippi Valley and northwest central states. Among cases reported, cervicofacial actinomycosis is the most common form with the most frequent manifestations about the mouth. The condition is produced by the anaerobic ray fungus. It is believed that the portal of entry of the actinomycetes is through the structures in the oral cavity: through the pulp canal and periodontal membrane.

Lamb and his associates[1] have recently reported on fifteen cases of cervicofacial actinomycosis. Among these cases, eleven were associated with the removal of teeth and in two cases there was a severe exacerbation of an existing actinomycosis following tooth extraction. The distribution of lesions was as follows: seven cases, submaxillary region; two cases, supramandibular in the area of the cheek; two cases, parotid-masseter region; four cases, acute perimandibular type with swelling above and below the mandible with extension downward to the level of the clavicle.

The disease is intimately related with dental tissues in origin and may be masked to appear as sequelae to dental infection. It is important that dentists be familiar with the clinical manifestations and diagnostic signs as described by Lamb and his associates:

"The onset of the disease in our experience has been insidious. The usual history is of chronic periodontitis surrounding a carious tooth or teeth, often going back for several years. During this time there may be swelling about the alveolar processes and even in the soft tissues, with more or less pain. There is alternate regression of the active process and recurrence with exacerbation. During the period of regression the fungus probably migrates through the root canal or through the gingival pockets directly to the bone and soft tissues, along with secondary bacterial contamination. Each recurrence reduces the resistance of the tissues to the parasitic invader. This is consistent with Axhausen's opinion, already cited, that the person becomes hypersensitive to the actinomycetes, the resulting actinomycosis being an allergic reaction, on the part of the host, to a common parasitic inhabitant of the mouth, teeth, and tonsils. In most of our cases the acute state of actinomycosis had been preceded by the removal of infected or pulpless teeth. Twenty-four to forty-eight hours after extraction of such a tooth there had been a slight rise of temperature, with edema and swelling of the soft tissues about the mandible. In subacute cases the lesion consisted of firm subcutaneous tumors of purplish hue, which gradually softened, ulcerated and broke down, leaving fistulous tracts.

"The rapid, acute form of the disease spread gradually until all the soft tissues as far down as the clavicle were a solid wall of dense edema, with bluish red erythema. There was often a rise of temperature to 101 or 102° Fahrenheit, and the patient complained of such subjective symptoms as hoarseness, difficulty in swallowing, or choking. Inspection usually showed a central necrosis in the area in which the infection originated, with little true pus but with a suppuration of a clear, straw-colored fluid. As sinuses formed secondary bacterial invasion increased, particularly that of staphylococci and streptococci. In some cases the disease proved extremely resistant to treatment and became chronic, but in most instances treatment greatly shortened the duration of the disease, and roentgen exposures greatly altered its course.

"The salient points in the diagnosis of actinomycosis of the face and neck are: (1) dark red discoloration of the skin ("slate blue" lesions); (2) projection of the lesion beyond the surrounding integument; (3) multiple nodules, with the formation of ridges and furrows in the creases of the skin of the neck; (4) distinct (boardlike) induration; (5) multiple sinuses, with both macroscopic and microscopic granules of actinomycetes in the pus; (6) history of chronic periodontitis followed by an acute exacerbation of the inflammation of the gum after extraction of an abscessed tooth, and (7) pain that if present is not severe; it is often absent entirely."

In common with all diseases, an early diagnosis and prompt treatment offer the better prognosis. The best treatment for actinomycosis consists of local filtered roentgen radiation and the internal administration of sulfadiazine.

From the point of view of the dental pathologist, Lamb and his associates do not make a clear distinction between periodontal and periapical pathologic processes. Periodontal disease in any of its clinical forms—inflammatory, degenerative, atrophic, hyperplastic, or traumatic—is not often associated with pulp pathology. Disturbances of the dental pulp present a totally different clinical picture from periodontal conditions. We have the feeling from reading the otherwise excellent article that the authors are not too clear on their basic dental pathology.

[1]Lamb, J. H.; Lain, E. S.; and Jones, P. E.: Actinomycosis of the Face and Neck, J.A.M.A. **134**:351-360 (May 24) 1947.

Surgical Treatment of MAJOR NEURALGIAS

ROLAND M. KLEMME, M.D., St. Louis*

DIGEST

Among the medical conditions which dentists must differentiate from dental problems are neuralgic pains arising from the trigeminal, glossopharyngeal, or sphenopalatine nerves. Pain attributed to neuralgia may in reality be caused by one of several common dental conditions; these are listed. In order to orient the dentist in his consideration of neuralgic disturbances, that part of descriptive anatomy pertinent to the major neuralgias is sketched.

Surgical intervention gives the greatest promise of permanently relieving victims of neuralgic pain; other forms of treatment, except for alcohol injection in the case of sphenopalatine neuralgia, can only be palliative. The alternative treatment of glossopharyngeal neuralgia, after failure of cocainization of the tonsil or tonsillar fossa to abort an attack, is a section of the ninth (glossopharyngeal) nerve. Accurate differential section of the fifth (trigeminal) nerve, as introduced by the author, is the most effective operative procedure in trigeminal neuralgia. It avoids eye complications which tend to follow other methods of surgery. Operative risk is less than one-half of one per cent and the technique is applicable in 98 per cent of patients.

*Professor of Surgery, St. Louis University

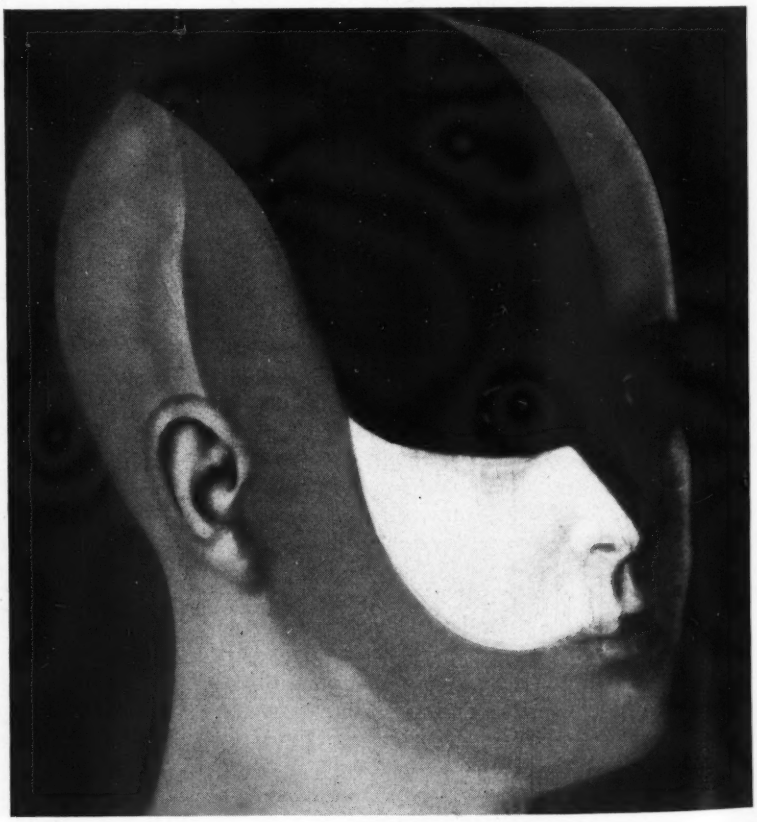
Trigeminal and Glossopharyngeal Neuralgias

THE PAIN of trigeminal neuralgia stems from either one branch, two, or all three branches of the fifth cranial nerve. The pain in glossopharyngeal neuralgia, on the other hand, usually stems from the posterior pharyngeal wall.

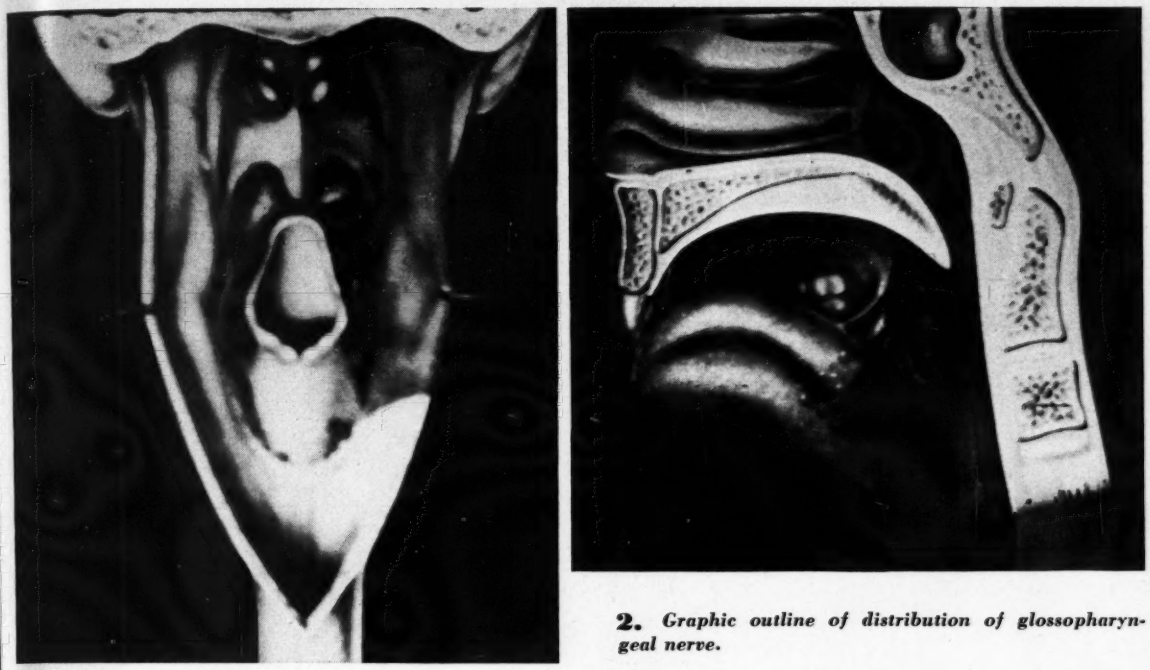
Symptomatology—The characteristic symptomatology in both of these conditions is paroxysmal attacks of lightning-like pain involving the nerve in its distribution to the face, as in the fifth cranial nerve, or to the throat and ear, as in the glossopharyngeal nerve.

Etiology—In both of these conditions the absence of an identifiable primary cause leaves the etiologic factor of these syndromes unknown. Various concepts have been presented ranging from focal infections to vascular changes.

The trigeminal syndrome is the



1. *Graphic outline of distribution of trigeminal nerve.*



2. ***Graphic outline of distribution of glossopharyngeal nerve.***

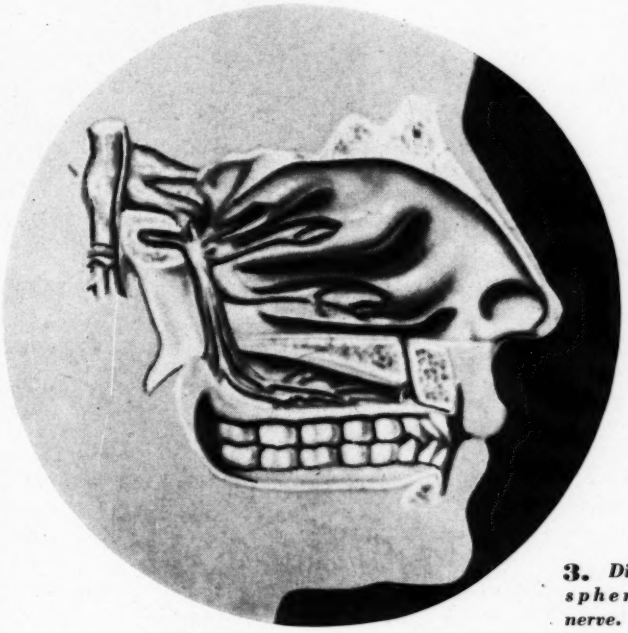
most severe and frequent of the neuralgias. A brief review of the anatomy is given to assist in the interpretation of symptoms.

Sites of Pain—The pain of trigeminal neuralgia occurs least often in the ophthalmic branch; in the series to be subsequently referred to, *less than two per cent*. The ophthalmic branch of the fifth nerve enervates the globe of the eye, cornea, vertex and forehead, as shown in black, Figure 1. The maxillary branch enervates the cheek, nose, and upper teeth, as shown in white, Figure 1. The mandibular branch, which passes through the foramen ovale and emerges at the mental foramen, enervates the lower teeth and the anterior two-thirds of the tongue, as shown in gray, Figure 1. Ninety-eight per cent of the patients suffering trigeminal pain experience it in the maxillary or mandibular branches or both.

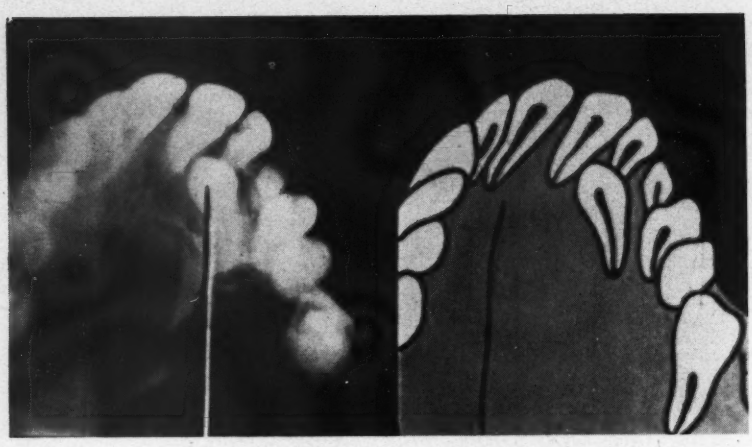
The pain of glossopharyngeal neuralgia, on the other hand, usually emanates from the tonsillar fossa and spreads to the ear on the same side and occasionally to the shoulder. The posterior one-third of the tongue is supplied by this nerve. The trigger zone or point of excitation in glossopharyngeal neuralgia is usually the tonsil or the tonsillar fossa, but it may extend anywhere between Rosemueller's Fossa and the cricoid cartilage (Fig. 2). Initial pain frequently arises in the ear canal and is many times attributed to an ear condition; but it is definitely in a branch of the glossopharyngeal nerve.

Sphenopalatine Neuralgia

Pain in sphenopalatine neuralgia can arise from any of the areas supplied by the sphenopalatine nerve. The sphenopalatine ganglion lies in the upper part of the pterygopalatine fossa close to the sphenopalatine foramen. Two ganglionic branches constitute its afferent roots (Fig. 3). Its branches are numerous, passing to the pharynx, palate, nasal cavity, orbit and lacrymal gland.



3. ***Distribution of sphenopalatine nerve.***

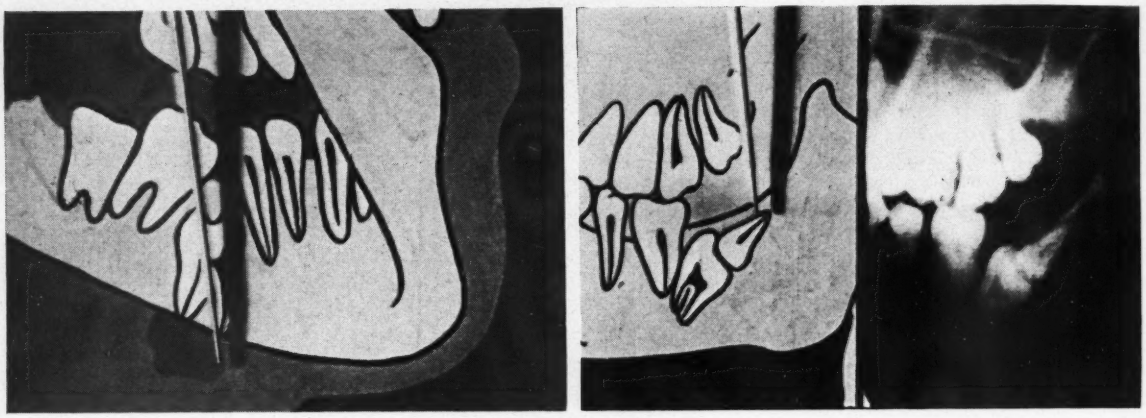


4. *Relation of tooth to nerve.*

tist. His patient generally complains of a "toothache." Many conditions about the oral cavity, that are of particular interest to the dentist, may precipitate neuralgic disturbances or create pain sensations that simulate these varied conditions.

1. Tooth pulp tissue involvement may simulate neuralgic disturbance. This condition is very promptly cleared up by removal of the pulp tissue and proper filling of the root canal.

2. Teeth that lie in close relationship with the inferior alveolar and other sensory nerves in the same area (Fig. 4) may cause this type of pain.

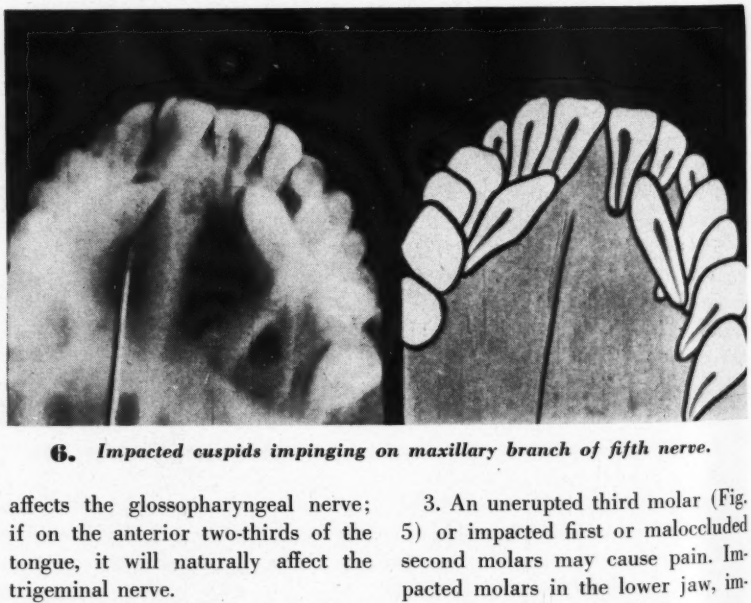


5. *Unerupted molars impinging on mandibular branch of fifth cranial nerve.*

Dental and Other Conditions Confused With Neuralgia

Any of these three types of pain—trigeminal, glossopharyngeal, and sphenopalatine—must be differentiated from various conditions about the throat and face ranging from sphenoiditis to pulpitis: neoplasms of the tongue, sinusitis, supernumerary teeth, overbite, mandibular joint involvement, impacted teeth, dentigerous cysts, and many other conditions.

Sphenopalatine neuralgia is frequently confused with ethmoiditis and sphenoiditis, but the thing that characterizes sphenopalatine neuralgia is the so-called lower half headache. Carcinoma of the tongue may simulate trigeminal neuralgia or glossopharyngeal neuralgia, depending on its location. If it is on the posterior one-third of the tongue, it affects the glossopharyngeal nerve; if on the anterior two-thirds of the tongue, it will naturally affect the trigeminal nerve.



6. *Impacted cuspids impinging on maxillary branch of fifth nerve.*

The problem of differential diagnosis is usually first met by the den-

3. An unerupted third molar (Fig. 5) or impacted first or malocluded second molars may cause pain. Impacted molars in the lower jaw, impinging on the mandibular nerve, may give symptoms that might be

confused with trigeminal neuralgia. The same is true of impacted cuspids (Fig. 6) which may produce pressure and cause pain in any of the adjacent peridental tissues, or, if deeply imbedded, may involve the maxillary sinus or the nasal cavity. Here the maxillary branch of the trigeminal is involved.

4. Factors that bring about an abnormal relationship in the temporomandibular articulation due to overbite, poor occlusion, and similar conditions, simulate the pain of trigeminal neuralgia.

5. Ill-fitting dentures, improperly healed fractures, dislocations, arthritis, and not infrequently partial or complete ankylosis may be confusing.

6. Pulp stones or calcifications which cause a constriction of the nerve and a compensatory degenerative effect are not infrequently a causative factor of pain. This is more often true in isolated teeth than in greater distributions.

7. Dental restorations impinging directly on or close to the pulp may cause thermal or mechanical irritation due to conductivity.

8. Pain from ill-fitting crowns or other restorations may be produced by undue pressure or chemical or bacterial involvement.

All of these conditions come to the attention of dental surgeons and must not be confused with major trigeminal neuralgia.

Selectivity of Brain Areas

The basic feature of neuralgia is pain. *Fundamentally, pain is a cerebral interpretation of relatively specific stimuli.* The specific area of the brain involved is determined by the type of excitatory factor functioning (Fig. 7).

1. The sense of vision is related to specific light stimuli of the eye and certain patterns of the nerve impulses, which reach the occipital lobe by way of the optic nerves, corona radiata, and the connecting fibers.

2. An auditory stimulus, on the other hand, registers in the auditory center of the temporal lobe.

3. The somesthetic area in the cortex is the terminal level of other registered stimuli.

7. ***Areas of brain involved, depending on type of excitatory factor.***

4. In striking a tendon with a percussion hammer, the appreciation of stretch is derived through impulses reaching centers of deep sensibility.

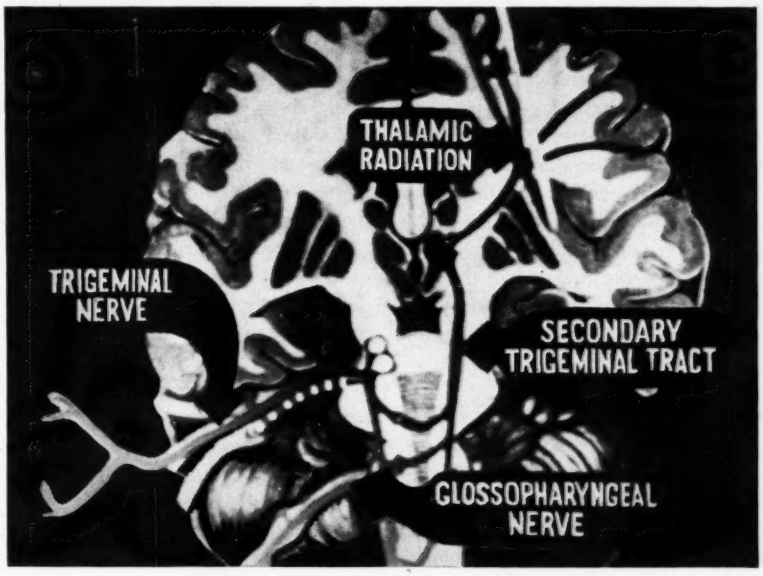
5. Pain, such as pin prick, results in impulses to conscious centers.

It is evident that definite types of stimuli affect specific brain areas. *These stimuli produce specific patterns of nerve impulses which traverse definite anatomic pathways before the impulses are finally registered in their respective selective areas of the brain.*

Nervous Pathways of Pain

Painful stimuli travel well-recognized nervous pathways (Fig. 8). Impulses are conveyed to the central nervous system over the afferent nerves.

1. The trigeminal impulses traverse



8. ***Nervous pathways of pain in trigeminal and glossopharyngeal neuralgia.***

9. *and* **10.** ***Postoperative area of anesthesia; no facial weakness; motor root preserved; no deviation of jaw.***

afferent nerves through the common intramedullary pathway.

2. Impulses arising in the glossopharyngeal nerve follow the same pattern and reach the cortex via the thalamic radiations.

The sensory fibers of the trigeminal nerve bifurcate and those conveying pain descend. The afferent fibers from the glossopharyngeal nerve join this descending root of the fifth cranial nerve and reach the cortex through the secondary trigeminal tract to the thalamus; from the thalamus these fibers conduct the impulses to the sensory cortex via the thalamic radiations. Pain impulses arriving in the peripheral system of the trigeminal nerve descend in the bulbo spinal tract and are joined by the glossopharyngeal nerve through the system just described.

Etiology of Neuralgic Pain

The etiologic factor of this pain is still unknown, but several concepts have been proposed.

1. One concept, that of reflex pain, assumes the existence of vasomotor hypersensitivity.

2. A second mechanism presumes a heightened synaptic activity in the secondary trigeminal tract along with the thalamic radiation, which facilitates stimuli from the nerve trunks to reach the quantitative level associated with pain. Reflex connections to the vasomotor hypersensitive centers of the brain precipitate paroxysms of peripheral vascular spasms and these in turn provide the afferent stimulation for pain through the thalamic radiation.

3. Recently Harold G. Wolf suggested that paroxysmal ischemia of the trigeminal structure, either central or peripheral, may be the influencing factor.

4. Another theory projected is heightened synaptic activity in the central reflex center which raises ordinary stimuli to the quantitative level associated with pain.

All these concepts, however, do not establish the etiologic factor of pain in major neuralgias.

Palliative Treatment of Neuralgic Pain

In Trigeminal Neuralgia—Trigeminal pain may be relieved by the use of vasodilator agents, such as triethylene as an inhalant, which in turn relieves the vasospasm or ischemia. (This tends to establish Wolf's concept of ischemia as the etiologic factor.) The use of triethylene as an inhalant is a palliative method of treating trigeminal neuralgia.

In Sphenopalatine Neuralgia—The palliative treatment of sphenopalatine neuralgia may be accomplished by cocainization of the ganglion in the nose. If this proves ineffective, alcohol injection of the sphenopalatine ganglion may be a necessary procedure before complete relief of pain is accomplished. This is strictly an otolaryngologic problem and will not be discussed any further here.

Chemotherapy—The other types of medical treatment of neuralgia are dependent primarily upon the depressive effect of drugs on the central nervous system by the use of coal tar products, analgesics, or narcotics, none of which cures the condition.

Surgical Treatment of Trigeminal Neuralgia

Failure of chemotherapy to relieve the excruciating pain of trigeminal neuralgia has led to various methods of treatment which will be related briefly here.

Miscellaneous Methods—1. Patrick introduced alcohol injection of the peripheral branches of the trigeminal nerve.

2. Schlichting's technique of peripheral nerve avulsion is still popular in many countries.

3. Hartley and Krause introduced the procedure of curettage of the gasserian ganglion, and Rose and Andrews about the same time advocated the resection of the ganglion.

4. Horsley attempted and Frazier, in 1898, perfected the section of the posterior root of the fifth nerve for the relief of pain of trigeminal neuralgia.

5. Olivecrona recently sectioned the bulbo spinal tract of the trigeminal nerve within the medulla oblongata. The danger of laryngeal palsy and disturbance of gait and station here is distracting. This procedure is still too recent for proper evaluation.

6. Dandy in 1925 developed the suboccipital approach for the section of the sensory root at the pons.

7. Davis cut the lowermost fibers of the root at the ganglion after determining that the root rotated one hundred and eighty degrees.

Accurate Differential Section—The major problem in the treatment of trigeminal neuralgia has been eye complications. Ulceration of the cornea, conjunctival inflammation, interstitial keratitis, and other ocular conditions can be precluded by using the accurate differential section, as introduced by the author. This surgical technique is applicable in 98 per cent of the patients inasmuch as this percentage of patients has pain in the distribution of the maxillary or mandibular branches or both. In less than two per cent of patients with trigeminal neuralgia is the ophthalmic branch involved. Consequently, accurate differential section—that is, *section of the fibers leading to the maxillary and mandibular branches and preservation of the fibers leading to the ophthalmic branch as well as the motor root*—is the operative procedure of choice (Figs. 9 and 10).

Operative results are most gratifying. The risk is less than one-half of one per cent. Complications are extremely rare. In a series of over 700 patients, two patients had a facial weakness following the operation. Preserving the ophthalmic branch and the motor root, as is done in the accurate differential section, precludes any eye complications and certainly any difficulty with dentures, whether they be artificial or natural. Only a few patients complain of paresthesia following the operation, but the amount of complaint relative to paresthesia depends to a great extent on the psychologic makeup of the person.

Surgical Treatment of Glossopharyngeal Neuralgia

Cocainization of the tonsil or tonsillar fossa occasionally suffices to abort an attack of glossopharyngeal neuralgia. If this is ineffective, a section of the ninth nerve, at its exit from the pons in the posterior fossa, is the only method that is satisfactory and the one that is desirable. The sequelae can be related briefly:

1. About ten per cent of these patients complain of paresthesia of the throat for a period of from about six to seven weeks.

2. About forty per cent have difficulty in swallowing for ten days.

3. One hundred per cent are completely relieved of pain and few complain of transient postoperative symptoms.

Summary

Accurate differential section of the fifth cranial nerve for relief of trigeminal neuralgia is indicated in ninety-eight per cent of patients suffering from this syndrome. In only two per cent is the ophthalmic branch involved, and in these instances a complete section must be done. Accurate differential section precludes eye complications and preservation of the motor root precludes any difficulty with dentures.

The operative risk in the treatment of trigeminal neuralgia or glossopharyngeal neuralgia is less than one-half of one per cent.

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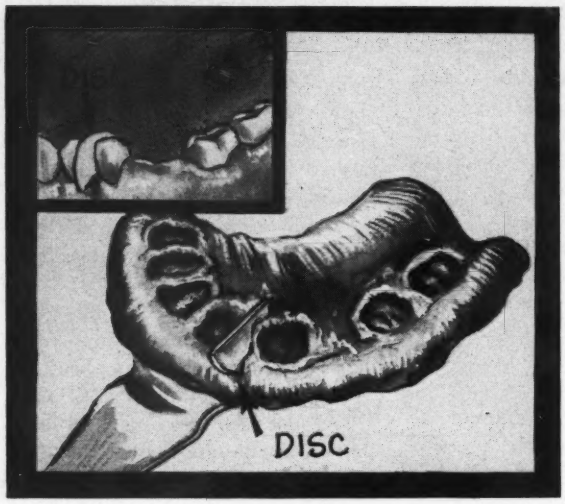
Clinical and Laboratory

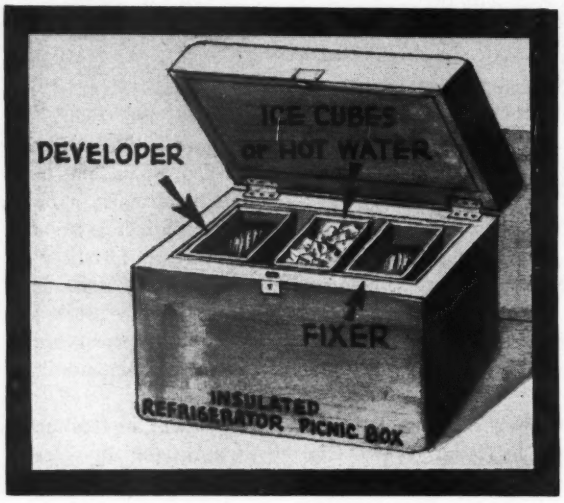


1

An Accurate Impression for Interproximal Space

H. M. Smallen, D.D.S., Brooklyn

1. In taking impressions in crown and bridge procedures, the plaster generally breaks out of a close interproximal space. This can be prevented by placing a partly cut sandpaper disc into the interproximal space so that it protrudes from all sides of the tooth. When the impression is taken, the disc will be engaged in the plaster; and when the cast is made, the disc will record the full depth of the interproximal space.

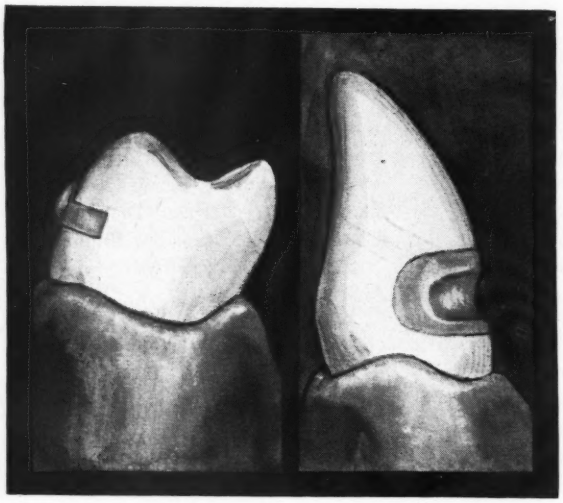


2

Controlling Temperatures of X-ray Solutions

Rosalie Carter, D.D.S., Franklin, Tennessee

2. The temperature of the developer and fixer for processing x-ray films may be controlled in both summer and winter by the use of an insulated refrigerator picnic box. The processing solutions are placed in noncorrosive jars in each end of the box and these are heated or cooled as indicated by placing hot water or ice cubes in the container which is furnished with the box.



3

Retention For Clasps

F. Engel, L.D.S., R.C.S., Bournemouth, England

3. In those cases where a lower molar has a pronounced lingual inclination, retention is difficult. In such cases an inlay may be placed on the buccal surface. This inlay carries a knob projection. If the clasp wire is placed under the projection, the retention is improved. In the case of conical teeth such as cuspids, clasp retention is difficult. In such cases a gold inlay may be used to increase retention. A slot is cut in the inlay to accommodate the clasp.

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UGGESTIONS . . .

Applicator Stick

M. H. Goodinsky, D.D.S., Philadelphia

4. To keep cotton from slipping off the applicator stick, first dip the stick in collodion and immediately wrap with cotton.

4

An Inexpensive Suction Apparatus

Raymond Levao, D.D.S., New York

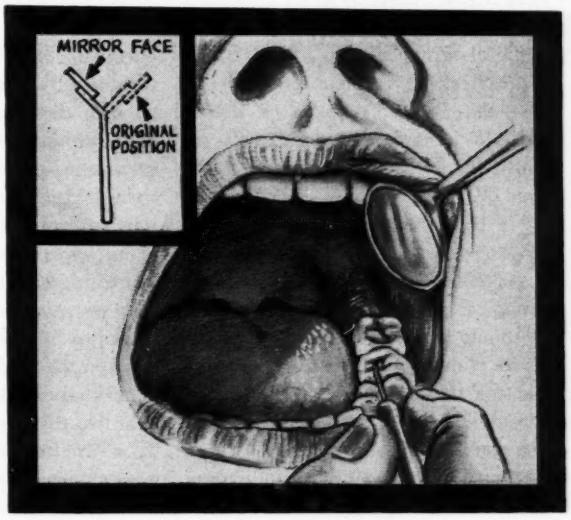
5. An inexpensive, quiet suction apparatus may be attached to a dental unit which does not permit any blood, sputum, or mucus to enter the plumbing system of the unit. A four-foot rubber hose is attached to the aspirator on the unit by means of glass tubing. This is attached by means of another glass tube to a two-hole rubber stopper which fits into a gallon or half-gallon bottle (discarded soap bottle). Another five-foot rubber hose is attached to the other hole in the stopper and a suction tip of any desired shape or size may be inserted and used in the mouth. The bottle may be kept out of the patient's sight behind the unit.

5

A Reflector and Retractor

Lieutenant (jg) K. A. Traeger (DC), Portsmouth, Virginia

6. Bend an ordinary mouth mirror back about 70°. The angle should be developed about eight centimeters from the face of the mirror. A mirror bent in this way may be used to retract the cheek and, at the same time, reflect light into the mouth.



6

suitable illustrations; write a brief description of the technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 364 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

MEDICINE and the Biologic Sciences

NaCl (Physiology)

Salt is tremendously important in maintaining normal environmental conditions of body components. Sodium chloride is important to the body as a whole. It also plays a role in ion antagonism, in the regulation of blood pH, in the maintenance of osmotic pressure, and in the carriage of CO_2 by the blood. And too, the salt serves as a source of Cl for gastric HCl.

The blood level of NaCl is maintained by the renal tubular cells which hold it at threshold level. The cells reabsorb salt from the glomerular filtrate or allow it to pass on in the urine, depending on the need for salt by the body.

The mechanism of this control is not fully understood except that the adrenocortical hormone is essential for the process. The absence of the hormone results in a loss of NaCl in the urine with a consequent fall of the blood level of NaCl.

Loss of NaCl occurs in the sweat but unlike the renal tubules the sweat glands do not control the amount according to need. This accounts for the depletion of NaCl which occurs in excessive sweating with resultant heat cramps and exhaustion. Another loss of NaCl occurs in the vomiting of gastric fluid.

Symptoms of lowered NaCl content of body fluid may be dehydration, anorexia, and asthenia as seen in heat exhaustion. Spasm of skeletal muscles in heat cramps may be due to an osmotic disturbance or to a specific low NaCl effect.

Main, Rolland J.: Synopsis of Physiology, St. Louis, C. V. Mosby, 1946, *page* 80.

Tropical Deterioration

Among many people in the temperate climates the belief is prevalent that the tropical climate has a deleterious influence on white persons. The war has offered an excellent opportunity to learn more about such a theory.

Some of the complaints of white persons in the tropical areas are: asthenia, anorexia, easy tiring, palpitation, languor, variable abdominal pains, often unexplained nausea, vomiting, and diarrhea. Frequently there is a lowered systolic blood pressure.

The early experiences of our armies in the jungles strengthened the belief in a specific deleterious effect of tropical climate on white men. However, as more was learned about the local conditions and the dietary needs most of the ill effects were eliminated. More effective control of malaria, dysentery, heat disturbances, and other tropical diseases by the use of new drugs did a great deal to improve the resistance of white man to tropical living. Also, new methods of controlling insects and infectious diseases along with scientifically tested tropical clothing and adequate amounts of water, salt, and food helped the whites to live decently in the tropics.

From the evidence gathered it was noted that white troops were efficient after two years of continuous presence in severe tropical surroundings. It was important that the men eat a variety of foods similar to the variety eaten in ordinary living. Caloric deficiencies were avoided and the food was prepared so that it was attractive and acceptable.

Editorial, Tropical Deterioration J.A.M.A. 133:1216 (April 19) 1947.

Lemon Juice—Action on Teeth

It is a well known fact among lay persons that lemons have a high vitamin C content. Many persons take lemon juice as a self-treatment measure to relieve constipation, to prevent and relieve colds, and even as a tonic. The use of lemon juice is frequently noted in those suffering from rheumatism.

Observations carried on at the Mayo Clinic revealed evidence of dissolution of dental structures among patients using lemon juice routinely. The ratio was about 4 women to 1 man affected. Most of them took lemon juice by internal feedings in water. (In a few cases lemon juice was a part of a reduction diet and often replaced entire meals.)

The solution of lemon juice produced defects in enamel characterized by rounded margins in contrast to defects produced by occlusal wear which left sharp margins. In some cases the defects progressed so far as to leave fillings projecting beyond the surfaces of the teeth.

Extreme dissolution of dental structures probably occurs if the juice is taken daily and at times other than with meals. It is possible, however, to obtain an adequate amount of vitamin C without resorting to the improper use of lemon juice. Therefore, its use as a daily drink in any appreciable concentration should be discouraged.

Stafne, E. C., and Lovestedt, S. A.: Dissolution of Substances of Teeth by Lemon Juice, Proc. Staff Meet. Mayo Clin. 22:81 (*March* 5) 1947.

Migraine—Causes

The presence of the migraines is one of the most perplexing problems of medicine today. These headaches

are usually associated with emotional disturbances. In the majority of cases an emotional depression can be a pertinent factor in causing migraine.

In about four-fifths of instances the headaches are unilateral at some stage. Along with unilateral headaches are vomiting and nausea. In over 70 per cent of the cases there is a family disposition to the condition.

Most of the cases of migraine start in the first or second decade and few last beyond the age of 60 years. There is a high incidence in professional people.

There is no scientific treatment available. Therefore, the problem has been approached from a number of avenues in an effort to find some agent or treatment for relief of migraine. Hormonal treatment has been advocated because some women are affected with migraine before or during the menstrual period. And, too, the female sex hormones have been used to treat cases. Others believe there is an allergic basis to the etiology of migraine. This tenet is difficult to prove because of the complications of allergy which make such an association vague.

Recently evidence has been accumulated to show that migraine may be caused by dysfunction in the cranial arteries. Probably the answer lies in a combination of both physiologic and psychologic factors.

Engelhardt, H. T., and Derbes, V. J.: The Treatment of Migraines, American Practitioner 1:392-394 (March) 1947.

Recuperation (Biology)

The average person assumes that when his temperature becomes normal and he feels better, following an attack from some infection, he is quite well. This is not the case. The body's powers of recuperation are remarkable but not quite so spectacular.

The period of recuperation or convalescence is one of the most important parts of an illness. There is no substitute for time. And it requires time for the body to give maximum repair to impaired parts. If the period of recuperation is curtailed, considerable permanent damage may result.

Clinical and experimental evidence justify the statement that for each five years that a person lives he requires an additional day for an equivalent amount of postinfection rehabilitation. Thus a sixty-year-old would require twelve days to accomplish the same degree of repair that a five-year-old will accomplish in twenty-four hours.

If too little time is taken for recuperation, the repair of tissues will be less complete with permanent damage probable; therefore, the body will not be in a position to repel a new invasion of bacteria. During convalescence an older person is particularly vulnerable to an acute recurrence of the original infection or to invasion by other bacteria. And with these secondary flare-ups the battle goes much harder with greater and more permanent injury possible. It should always be remembered that with increasing age more and more time is necessary for recuperation.

Stieglitz, Edward J.: The Second Forty Years, Philadelphia, J. B. Lippincott Company, 1946, *pages* 59-61.

Thyroid

The accepted treatment for most goiters for many years has been thyroidectomy. Iodine is used in the medical treatment of some goiters and for preoperative and postoperative treatment of others.

In dealing with patients with goiters there are three distinct problems to consider: First is heart failure which is secondary to a long standing hyperthyroidism; second is the presence of serious ocular disturbances; and third is the problem of recurrence of exophthalmic goiter.

The use of chemicals and the use of radioactive iodine are being investigated as means of dealing with goiter. Of the chemicals used the ones promising most success are thiouracil and propylthiouracil. It is believed that they interfere with the production of the thyroid hormone in contrast to iodine which is supposed to modify the character of the hormone. It is quite safe to say that propylthiouracil or some allied derivative is a medical cure for some patients with goiters but not for others.

In the preoperative preparation of exophthalmic goiter patients thiouracil has been used to advantage in many cases. And in others its combination with iodine seems to be better.

It is wise to watch closely patients who are receiving these drugs as the degree of toxicity in different persons varies. Frequent leukocyte counts are advisable and observation should continue as long as the drugs are given.

Recently the use of radioactive iodine has been advanced as a treatment for hyperthyroidism. There is too little data to form any definite conclusions as yet. The government is gradually releasing quantities for clinical study. The procedure of its use appears dramatic inasmuch as the patients need only swallow a glass of water containing a salt of radioactive iodine. This radioactivity is limited to cells which have an affinity for iodine; activity is thus virtually limited to the thyroid cells. It will be some time before the results and potential possibilities can be evaluated.

Rynearson, Edward H.: Some Clinical Disturbances of the Endocrine Glands, J. Michigan M. Soc. 46:318-321 (*March*) 1947.

Allergy—Psychosomatic Relationship

The term allergy is used rather loosely to cover a wide number of disorders. Therefore it is not at all amiss to state a sound concept of allergy.

Allergy may be considered as a condition appearing after previous sensitization, based on an antigen-antibody reaction and manifested as a hypo- or hypersensitiveness to a previously nontoxic antigen.

A great deal of evidence is being gathered indicating the importance of psychic factors in predisposing to the precipitation and maintenance of allergic diseases. There are four ways in

which psychosomatic influences may have a relationship to allergy: First, these influences may be the cause of pathogenic diseases; second, these influences may act as a predisposing factor in the development of allergy; third, they may act as an eliciting factor or "trigger mechanism" in an already established allergic disease; and fourth, psychosomatic influences may act as an effect of a chronic or recurrent allergic disease on the personality or psyche of the patient.

It is not easy to explain the manner in which psychic factors predispose to allergy. Perhaps the best explanation is that such influences bring on alterations in the excitability of the autonomic nervous system. And thus stimuli which until then were of subthreshold level acquired the capacity of acting as excitants. Also, it is noted that psychic stimuli, by affecting the vascular innervation, bring about a change in the blood supply of the peripheral tissues.

It is interesting to note that a relatively constant type appears to be characteristic of allergic patients. For example, the asthmatic child is above average intelligence, aggressive, quick to respond, over-anxious, insecure, and lacking in self confidence. It is surprising how frequently these symptoms are seen in allergic patients.

The effect of anxiety, fear, and fatigue is such as to materially lower resistance of tissue to bacterial invasion. Studies show that the threshold of the allergic reactivity of shock tissue is decreased by psychic factors.

As a broad generalization it is safe to state that psychosomatic factors appear to have their greatest influence in neurodermatitis and urticuria. They are of less importance in asthma and allergic rhinopathy and of little or no significance in the causation of hay fever and allergic contact dermatitis.

Urbach, Erich and Gottlieb, Philip M.: Allergy, New York, Grune & Stratton, 1946, *pages* 63-78.

Cancer of the Breast

Certain types of human cancer are responding to hormonal therapy with an encouraging rate of success. Cancer of the prostate, a type which has an extremely high mortality, has reacted favorably to such treatment. There have been 25 per cent cures in these cases. Further studies and experiments are being conducted in fields where cancer is either produced or materially influenced by sex hormones.

One of these fields is cancer of the breast. The peak age of the greatest number developing breast cancer is forty-five years. This age probably represents the time when certain chemical changes are present resulting from a decrease in normal ovarian hormone output. The ovaries undergo certain changes at this age leading up to the menopause which comes at an average of 46½ years.

The next greatest number developing breast cancer is found at 60 years. At this age there probably is no ovarian output. It is possible that in the 13 or 14 years since a definite ovarian function occurred, as evidenced by menstruation, there may have been a complete lack of hormone output. This may well be a possible cause for the production of breast cancer in the older age group.

The condition of women 60 years or older with breast cancer is improved by the use of the estrogens. Testosterone propionate is the agent most widely used for the majority of all age groups. Where cancer involves such soft tissues as the liver, lungs, brain, and local skin recurrence, only a small number of cases shows any improvement.

However, a startling improvement is noted in cases which involve bone metastasis. The agent seems to have a predilection for repair work in the bone cases. The reason for this is still unknown. Cancer cells persist after testosterone therapy, but they seem to be "snowed under" by the copious deposits of calcium precipitation, especially in the areas of bone destruction.

After approximately two weeks of testosterone treatment the relief from pain is very real. Lack of sleep is replaced with natural sleep usually without narcotics. Many patients are able to return to work with a reasonable degree of comfort.

It is still unknown just how long this improvement in the osseous tissues persists. There are cases today showing no evidence of disease or symptoms two years after the administration of testosterone therapy.

In cases of widespread bone metastasis the use of testosterone seems more efficacious, longer lasting, and more practical than x-ray therapy. It is difficult and often dangerous to deliver x-ray therapy on as wide a scale as testosterone therapy.

Patients receiving testosterone therapy develop unpleasant masculine traits as evidenced by a deeper voice, hair on the face, pimples on the face and body, and an enlarged clitoris which is often of great annoyance. As a rule the clinical results of testosterone treatment are far more startling than the x-ray picture reveals.

Testosterone may be employed on female patients with breast cancer at any age while the estrogen therapy must be strictly confined to patients of 60 years or older. A great deal of work is being carried on and the results to date are profound and gratifying.

Adair, Frank E.: The Use of the Male Sex Hormone in Women With Breast Cancer, Surgery, Gynecology and Obstetrics 84:719-722 (*April* 15) 1947.

Contra-Angles

Cossacks in Ohio

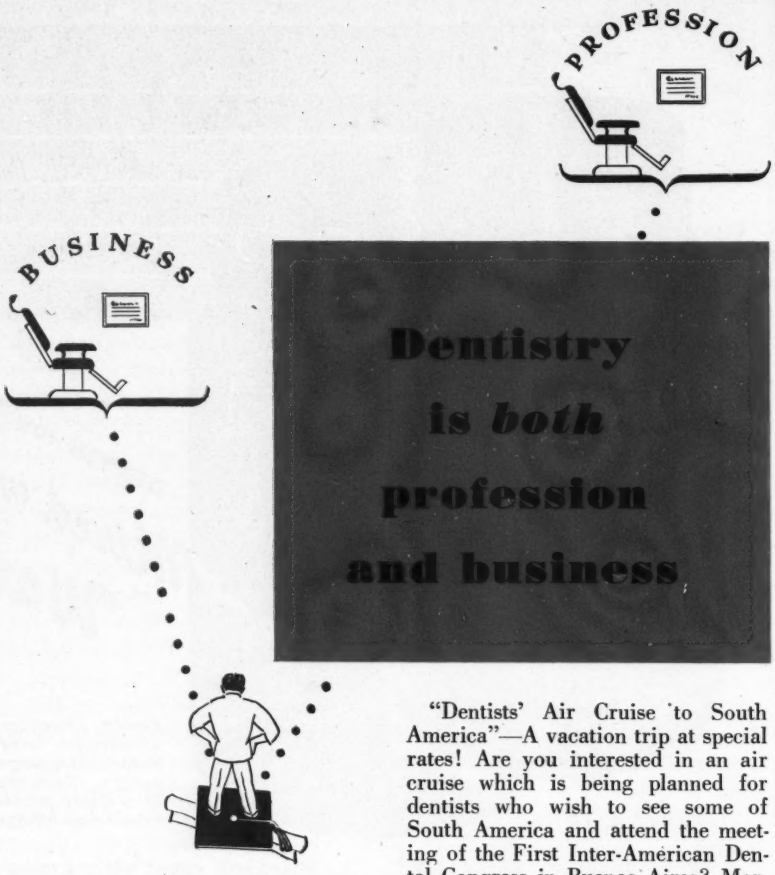
If you are a citizen of the United States driving over the roads of Ohio, keep an eye open for the Cossacks in the persons of the Ohio State Highway Patrol! They will pinch you at the drop of one of their big Stetson hats. I have been driving for thirty-three years and the first brush that I have had with the law was with the fancy-dress Ohio Cossacks. (I am quick to write, however, that there are many times when I *should* have been pinched for traffic violations.)

In Ohio I learned you must stop for a school bus that is going in the *opposite* direction even if the bus is not clearly marked and it is 4:46 p.m. The roads in Ohio are uniformly bad. The one marked the Grand Army of the Republic Highway (U.S. 6) was apparently built by the Union soldiers returning home from the War Between the States (we have Southern readers, too). It was on this road, about twenty miles out of Akron, that I found the Cossacks hiding behind a school bus to trap the unsuspecting motorist.

It isn't always easy to tell whether a car going in the opposite direction is slowing down, stopped, or starting. If there are no signal devices or red lights in operation, it is virtually impossible to tell. Such was the case on U.S. 6 in the month of May with the Cossacks close behind.

The Ohio State Highway Patrolmen are spruce and polite. They treat an infraction, however, as a major crime and look upon the person as one dedicating himself to slaughtering little children on the highway. One cop had a name that ended in "sky." That, with the fancy star embroidered on his sleeve, made him seem a bit like a Russian marshall or something. Mr. "—sky," it would

In your ORAL HYGIENE this month



Dentistry must be *both* profession and business if the dentist is to gain *both* intellectual and financial satisfaction. Doctor Balint Orban (winner of this month's Oral Hygiene award) explains how the dentist can get more enjoyment—and a better living—from his practice.

★ ★ ★

"Dentists Die at Their Chairs"—but die *happy*, according to Doctor Edward L. Wharton. If a dentist *enjoys* his work, he may be disappointed in a retirement which does not provide a satisfactory substitute interest.

★ ★ ★

"Paul Revere, Boston Dentist"—"fixt" and "drew" and "cleansed" the teeth of the whole community. You will enjoy John D. Hanlon's story of this famous early dentist.

★ ★ ★

"Dental Life at an Atomic Bomb Plant"—a dentist-eye view of the operations at Richland, Washington.

"Dentists' Air Cruise to South America"—A vacation trip at special rates! Are you interested in an air cruise which is being planned for dentists who wish to see some of South America and attend the meeting of the First Inter-American Dental Congress in Buenos Aires? Marcella Hurley, director of Pan American Council of Chicago, outlines the plans.

★ ★ ★

"Fibrin Foam in Daily Exodontia"—Doctor Phil D. Falkenstien believes that "fibrin foam is an easy-to-use hemostatic agent in the hands of the general practitioner." He describes in detail its use and advantages.

★ ★ ★

"In Defense of State Examining Boards"—Doctor Walter S. Kyes argues that state examining boards are dentistry's safeguard of its present high standing.

★ ★ ★

"Rejuvenate the Tax Law's Health Provisions!"—In the April issue of Oral Hygiene, Harold J. Ashe suggested that "*All* Health Care Should be Tax Deductible." Mr. Irving Elbaum, a certified public accountant, reinforces that contention by quoting facts and figures.

seem, must have been a recent reader of one of the novels of his countryman, CRIME AND PUNISHMENT. It was he who insisted on a visit to the court of the Justice of the Peace.

In rural Ohio (York Township, Medina County) the law is often dispensed in queer places. The same is true in other sections of the country. The Justice held his court in an outbuilding—a little too large for a privy and a little too crisp-smelling for a chicken house. The Justice, Mr. Justice Swartz, came away from his chores to preside at court neatly dressed in blue jeans. The officer, Mr. "—sky" quoted such numbers as Section 6307-73, 119 V. 790. I never could remember the quarterback signals or the combination to a lock; so I couldn't follow this part of the procedure except to think that these numbers must be the ones that were to hang around my neck in the state penitentiary.

After a lot of writing and serious visiting back and forth between Mr. Justice Swartz and Mr. "—sky," I was informed that it being a free country with a nice Constitution, I could have a jury trial (if I wanted to spend the summer in Ohio); or, I could plead guilty to the dastardly crime and throw myself upon the mercy of the court. I chose Mr. Justice Swartz to my peers from the neighborhood; the papas of the kids I was accused of endangering on the highways.

I have seen too many movies, I fear. You know, courtroom scenes, last minute reprieves from the governor before the executioner pulls the switch, and all that sort of stuff. Here I was to have my day in court and no one in Mr. Swartz's outhouse except him, Mr. "—sky," and the little Swartz boy who tramped in and out during the procedure with a bucket of sand that he wanted me to help him play with. Mr. Wolf, the other patrolman, guarded the door from the mob that might be coming to lynch the accused or to beat off any of the accused's friends who might be flying to Medina County, Ohio, in a Buck Rogers space ship to attempt a last minute delivery from the outhouse. (I am beginning to like this

word "accused.") Well, anyway, when Mr. Justice Swartz asked me to rise and plead my defense, I was so crushed by the lack of the tense drama of the courtroom (and hopeful that little Swartz would spill his sand on Mr. "—sky's" shiny Cossack boots) that I remarked that I didn't know I had passed a school bus, didn't see any red lights or signals and added, with that pathos that I had heard the movies give with where a man is pleading for his life: "I know ignorance of the law excuses no one but I didn't know you had to stop for something going the other way."

Mr. Justice Swartz agreed that my ignorance was a poor defense. I told the court that I didn't make a habit of killing children and that youth should be protected from homicidal maniacs in motor cars. I quoted my record of thirty-three years driving without a blemish. Mr. "—sky" searched my driver's license; twisted it around, turned it, peered under it to test this fact. But my record stood unsullied in the courthouse in the outhouse. Mr. Justice Swartz consulted Mr. "—sky" about the punishment sufficient to fit the crime. The officer expressed the opinion that inasmuch as I gave no trouble, made no threats, made no effort to escape, I should be treated with mercy. Ten dollars and costs!

I have always wondered what "and costs" were. I found they were $5.00 and I presume that they paid Mr. Justice Swartz for the use of his outhouse and his efforts in writing out the papers. Or, maybe, Mr. Justice Swartz and Mr. "—sky" get together once in a while, have a drink, and talk over CRIME AND PUNISHMENT. *Somebody* has to pay for the drinks, doesn't he?

Overhauling the School System

The thirty-seven year old president of a corporation doing a $200,000,000 business a year is entitled to have some opinions. This young executive, Mr. Charles Luckman, President of Lever Brothers, speaking at the installation of the new president of the University of Illinois, urged a re-

organization of our school system with the elimination of summer vacations, the establishment of college classes on a three-shift, fifty-two week basis, the creation of labor-management schools, and a minimum annual salary of $3,000 for members of the teaching profession.

Mr. Luckman pointed out that our annual bill for education is only one and one-half per cent of the national income whereas the Soviet Union spends eight per cent of its income "to make big Marxists out of little ones." Mr. Luckman proceeded to say: "If our country can afford to spend twenty billion dollars a year on recreation, tobacco, alcohol, soap, and beauty preparations, it can afford to line up an additional three billion for the knowledge and understanding so vital to the perpetuation of our democratic way of life."

Speaking of the grossly underpaid school teachers of the country to whom we entrust the minds of our children, Mr. Luckman pointed out that "over 200,000 of the nation's teachers earn less than $25 per week and the national average is $37.02 per week." Teachers are expected to be college graduates. They are expected to live on a decent level, to be well dressed, and to do the proper things in a community. We cannot expect these people to dedicate their lives to improving the minds of our children if they are paid in the sweat shop category. It will take more men like Mr. Luckman, people who have been phenomenally successful in the business world, to back the agitation to raise the salary standards of our teachers.

This same woefully paid profession finds a counterpart in the dental educational system. Very few men can afford to put in a life as a dental teacher. Most dentists immediately after they are out of dental school make more than a full professor in a dental college. And no one ever became a full professor without years of labor behind him in the lower teaching categories. If we are going to raise our educational standards, we must attract our best talent to the schools. If, as Mr. Luckman points out, a minimum salary of $3,000

should prevail in our public school system, a minimum salary of $5,000 per year should be paid to our dental teachers.

Gypping the Dental Corps

The 20,000 dentists who served in the Army and Navy during the war smart under many of the indignities heaped upon them. These same dentists should experience an elevation in blood pressure when they read the provisions of a new bill presented before the Senate "to provide for the procurement of physicians and surgeons of the Medical Department of the Army and for other purposes." The sly little phrase "and for other purposes" provides for "the reimbursement of Medical Corps officers for the added expense of their professional education and loss of earning power while undergoing such education in the amount of $1200 per year during the first thirty years of active commissioned federal service."

The Bulletin of the United States Army Medical Department,[1] which is the mouthpiece of the Surgeon General, comments on this proposed legislation as follows: "Reimbursement compensation is based on a frank recognition of the undeniable fact that Medical Corps officers should receive compensation in some measure comparable to earnings in private practice. Payment of this compensation to officers of the Medical Corps is justified by the fact that these officers not only bear the cost of their professional education, an

(*Continued on page* 364)

[1]News and Comment: The Bulletin of the U. S. Army Medical Department 7:494-497 (June) 1947.

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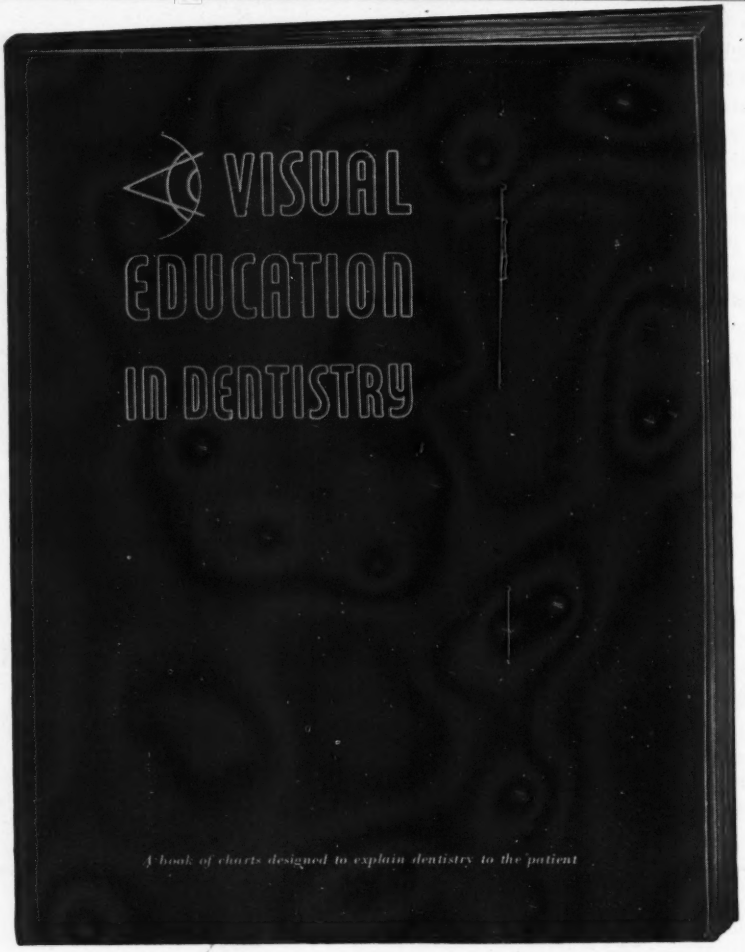

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Contents

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 348 *and* 349)

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$10 will be paid to author on publication of accepted suggestions.

(*Continued from page* 361)

expenditure greater than that required for most other professional training; but also they are deprived while in this training of earnings normally accumulated by individuals of a similar age group."

Those words have the recognizable marks of the Surgeon General who is always looking for preferential treatment of Medical Corps officers and discrimination against Dental Corps officers. You will note that there is nothing in this legislation or in the bit of lobbying that the Surgeon General is doing for the bill that mentions that Dental Officers should also receive an additional $100 per month. Dentists, lawyers, engineers, businessmen, and everyone else except the graduates of the United States Naval Academy and the United States Military Academy are required to pay the costs of their own professional education. They, also, are deprived of earning power while they are going to college.

Any legislation that singles out one branch of the service for preferential treatment is class legislation and all class legislation is bad.—E.J.R.

Pterygomandibular Abscess Confused With Acute Peritonsillar Abscess

SAMUEL ZURIK, Lieutenant Commander (MC) USN and M. M. TANNER, Lieutenant Commander (DC) USNR

A MEMBER of the Women's Reserve complained of sore throat and considerable difficulty in swallowing while being routinely checked through the station dispensary. Temperature was 100.2° Fahrenheit; examination of the pharynx revealed marked swelling and congestion of the right anterior pillar of the fauces (palatoglossal fold) with some edema and displacement of the uvula to the opposite side; the tonsils were surgically absent; the remainder of the physical examination was essentially negative.

Case Report

Diagnosis—Acute peritonsillar abscess, right.

Treatment—Sulfonamides and hot saline irrigations, under hospitalization.

History—One month prior to the onset of the patient's condition, her lower right third molar was extracted because of horizontal impaction. The extraction was difficult and entailed considerable manipulation. She visited the dental officer several times following this procedure and was discharged with the socket completely healed.

There was no improvement in symptoms under conservative regimen: (1) There was some lateral extension of the abscess involving the pterygoid muscles, giving rise to trismus; (2) dysphagia became more marked, with considerable involuntary drooling resulting therefrom; (3) pain was referred toward the ear on the affected side.

Examination—In dental consultation either retained tooth fragments or an osteomyelitic process was considered to be causing the abscess. The tonsils were surgically absent; roentgenograms of the lower right molar area revealed no pathology; there was a normal deposition of fibrous connective tissue in the alveolar socket. Clinically, the mucoperiosteum in the questionable site was well healed.

The next day there was some subjective improvement. Clinically, the following changes had occurred: The abscess on the anterior pillar was now more circumscribed and fluctuant; in the right pterygomandibular space appeared a small fistulous opening; finger pressure over the now fluctuant anterior pillar abscess evoked a sanguino-purulent discharge.

Surgical Treatment—Under local anesthesia a probe was introduced through the fistulous opening to the depth of the abscess in the anterior pillar. An incision was made directly over the path of the probe. Copious purulent discharge ensued, followed immediately by two particles of tooth structure measuring three millimeters by one millimeter. The abscess was completely evacuated and then lightly packed with 5 per cent iodoform gauze drain.

On the following day the drain became loose and was removed; it con-

tained another tooth particle. Healing and complete recovery were thereupon rapid and uneventful.

Summary and Conclusions

1. This case is of considerable interest because of the unusual etiology attached to an abscess of the anterior tonsillar pillar.
2. It is felt that several tooth fragments were dislodged during tooth removal and became embedded in the right pterygomandibular fossa.
3. The report emphasized more strongly the continued need to bear in mind the possibility of dental pathosis simulating other conditions.

—From *Navy Medical Bulletin* 46:-1909-1910 (*December*) 1946.

Advertising Index

Posture In Anesthesia

HOWARD DITTRICK, M.D., CLEVELAND

A HOUSE surgeon at St. Bartholomew's Hospital chloroformed a cat. When it was apparently dead, he carried it out by the tail to bury it. The cat promptly recovered. Thereafter, inversion was carried out routinely in chloroform collapse.

Even though position of the patient is dictated by the surgeon, the anesthetist should remember advantages of the *head - down position*. The physiologic effect of this position is valuable in counteracting depression of certain drugs. Such posture, through increase in heart volume, stimulates heart action. In *head-up posture*, blood collects in the lower extremities with development of physiologic edema; in *head-down posture*, increased venous return delivers excess blood to the heart.

When anesthesia is within the lower limit of the margin of safety, determination of the degree of hazard from such complications as overdosage, hemorrhage, or anoxia will depend upon correct interpretation of circulatory or respiratory signs. The greater the depth of anesthesia beyond this lower limit, the greater is the necessity for improving circulation by body posture.

—From *Current Researches in Anesthesia & Analgesia* 25:176 (July-August) 1946.

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NO DENTAL author can ever be *paid* for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often expends money for drawings, photographs, models, or graphs. We should like to help defray some of these expenses.